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ANTHROPOLOGICAL INSTITUTE

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FEBRUARY 10TH, 1880.

FRANCIS GALTON, Esq., F.R.S., *Vice-President, in the Chair.*

The minutes of the last meeting were read and confirmed.

The Election of the following new Members was announced: THOMAS HODGKIN, Esq.; ALFRED TUCKER, Esq.; H. C. STEPHENS, Esq.; J. A. FARRER, Esq.; B. M. WRIGHT, Esq.; T. W. A. ROBINSON, Esq.; and W. D. GOOCH, Esq.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the EDITOR.—"Nature," Nos. 533–36.
From the SOCIETY.—Journal of the Society of Arts, Nos. 1417–20.
From the EDITOR.—Revue Scientifique, Nos. 29–32.
From Dr. BROCA.—Revue d'Anthropologie, No. 1, 1880.
From the EDITOR.—Archiv für Anthropologie, Nov., 1879.
From Dr. BARNARD DAVIS.—Selci lavorate, bronzi e monumenti di tipo preistorico di Terra d'Otranto. Per Giustiniano Nicolucci.
From A. R. THOMPSON, Esq.—Account of the Natives of Western Australia.
——— ——— Report upon the Aborigines of Western Australia, by Dr. Milne Robertson.
From DR. E. JARVIS.—Circulars of Information of the Bureau of Education (U.S.), No. 3, 1879.
From the SOCIETY.—Journal of the Royal Asiatic Society, Vol. XII, Part 1.

From the ACADEMY.—Boletin de la Academia Nacional de Ciencias de la República Argentina. Tomo III, Entrega 1.

From the EDITOR.—Revue Internationale, No. 1, 1880.

From the AUTHOR.—The Method of Manufacturing Pottery and Baskets among the Indians of Southern California. By Paul Schumacher.

From the SOCIETY.—Bulletin de la Société Impériale des Naturalistes de Moscou, 1879, No. 2, Proceedings Vol. XXXVIII, Part 2.

From the SOCIETY.—Achtzehnter Bericht der Oberhessischen Gesellschaft für Natur und Heilkunde, Nov., 1879.

From Professor AGASSIZ.—Bulletin of the Museum of Comparative Zoology at Harvard College, Vol. V, Nos. 15, 16.

——— ——— Annual Report of the Curator of the Museum of Comparative Zoology at Harvard College, 1878–9.

From the SOCIETY.—Proceedings of the Royal Society, No. 199.

From the ACADEMY.—Sitzungsberichte der Kaiserlichen Academie der Wissenchaften.

Philos-histor, classe. Band 90, Heft. 1, 2, 3. Band 91, Heft 1, 2. Band 92, Heft. 1, 2, 3. Band 93, Heft. 1, 2, 3, 4. Register 81—90.

Math-naturw. classe 1878. I. Abtheilung, Nos. 5–10. II. Abtheilung, Nos. 4–10. III. Abtheilung, Nos. 1–10, 1879. II. Abtheilung, Nos. 1–3. III. Abtheilung, Nos. 1–5.

Almanack, 1879.

From the ASSOCIATION.—Report of the forty-ninth Meeting of the British Association. Sheffield, 1879.

From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. II, No. 2.

From the AUTHOR.—Who are the Irish? By James Bonwick, F.R.G.S.

From the SOCIETY.—Journal of the Asiatic Society of Bengal, Vol. XLVIII. Nos. 228, 229. Proceedings, August, 1879.

From the ASSOCIATION.—Proceedings of the Geologists' Association, Vol. VI, No. 4.

The following paper was read by the Author:—

On the CENTRAL SOUTH AFRICAN TRIBES *from the* SOUTH COAST *to the* ZAMBESI. By Dr. EMIL HOLUB.

IN the following paper I propose to describe some of the results of my ethnological researches during a sojourn both in the colonies and the southern parts of Central Africa.

Of the tribes living between the coast and the Zambesi, I divided these researches into two parts: the first relating to South Africa, and the second to Central Africa. I did not visit either the east or the west coast. When a traveller visits the interior it is only natural that he should make

acquaintances among the natives. He must enter their villages and obtain permission from the kings to pass through their countries; he must buy food from the people, and employ them as servants. It has been the custom for every traveller to give some kind of description of the tribes and countries which he visited, but I believe the public generally, as well as scientific men, are, at present, not satisfied with a mere list of names of tribes and countries, and a description of some of their most interesting customs; therefore, in order to obtain some satisfactory information concerning them, it is necessary that a traveller should live for months, or even years, among the natives. He must study their language, to some extent at least, notice their customs, and see how they deal with one another, with other tribes, and with white men. I thought it would not do for me to go at once into regions between the Vaal, the Limpopo, and the Zambesi, which are not yet in any way civilised; but that I should first become acquainted with the tribes living among the white men, so that I might afterwards be able to notice the difference between those who enjoy the benefits of civilisation and those who do not, and then draw my own conclusions.

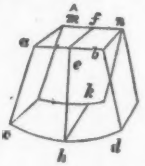
I went to South Africa without any prejudice for or against the natives. I had learned something about them from Dr. Livingstone's book, but otherwise I was in entire ignorance regarding them. In the Diamond Fields I practised as a medical man, in order to obtain the means for prosecuting my travels and explorations. I saw how the natives behaved as servants, and how the English and Dutch dealt with them. Then I endeavoured to ascertain if there was any connection between those tribes and others further inland. When I visited the interior I entered the villages professionally, and in this way I was successful in gaining the confidence of the natives. I am proud to say that I was thus enabled to observe what many other travellers could not, namely, how the natives appeared in their private lives; in fact, I could see, as it were, behind the curtain. The result was that, certainly against my own will, I have had to upset certain opinions which have been formed about the natives.

I divide my subject into two sections: the first concerns the tribes of whom I found traces, but who are not now in existence; and the second section relates to living tribes. The non-existing tribes I again divide into two branches.

Along the south coast I found traces of tribes which do not now exist there, such as heaps of burnt bones of wild animals, none of domestic animals, and broken shells. These heaps are often 6 feet high, having a circumference of from 40 to 60 feet. When able to dig up some of their implements, we shall, I suppose, find some relationship between those past tribes and

the one which still up to the present time exists (living upon fish and mussels) in the rocks and caves of the Portuguese settlement on the west coast of Africa. I conclude, therefore, that those heaps were formed by a race which stood very low indeed, but in order to obtain complete information on the subject, it would be necessary to spend three or four months in investigation and in digging the mounds; I could not then spare the time, but I hope to be able to do so during my next journey.

The second group of non-existing tribes belonged to the regions between the Limpopo and the Zambesi. I found there ruins of locations. It is very well known that two hundred years ago there was an empire in Central Africa, with which the Dutch and Portuguese traders were well acquainted. We also know that there were provinces called Motapa or Monopotapa, but that is all the information we have about them. I am not sure that the ruins I saw belonged to this extinct race, but I believe so; they were generally in the vicinity of mines, especially gold mines. They were of stone, on the tops of mountains, put together without any cement, but so well fitted together that they have stood for hundreds of years. Some of the ruins were formed of blocks of granite in the shape of large bricks. The tops of small hills were



a b, 3 to 5
c d, 8 to 10 } inches long.
e f, 2–3

h k, a little higher than *e f*.
a m n b was the inside, towards the interior of the round and eliptical shaped ruinous part.

in this way fortified, with openings in the walls. I am not certain that these remains belonged to those who inhabited the Empire of Monopotapa, but I am sure that they belong to no tribe that is at present found in South Africa. I think that some of the stone work was made complete by a wooden fence erected on the top of it. Exploration of these ruins would, I feel confident, be amply rewarded. When I saw them I was too ill with fever to do more than make sketches.

From what I observed of the wars that have been carried on between the different tribes during the last few years, I come to the conclusion that whole tribes have been exterminated in South Africa. When a country is conquered it is the custom to kill all the male population, take the women and children prisoners, and educate the latter as warriors for the victorious tribe, or enslave them. In this way whole tribes have ceased

to exist. We know that Livingstone mentions a powerful tribe of the Basutos on the Upper Zambesi, named the Makololo, but if we now visit those parts we find that the only representatives of that tribe are women and children, and one man. The latter was spared because the daughter of the king took a liking to him, but all the other male adults have been killed. These wars cause a great many difficulties to the anthropologist because the races become mixed.

Between the Limpopo and the Zambesi we find ten different tribes mixed with the Zulu race, and a gentleman going among them in order to make anthropological researches would see many things that would astonish him. The men of ten tribes who formerly lived in the vicinity have been killed; and the women and children having been captured, a new Zulu population has been created.

The living tribes I divide according to their language and external appearance into three races—I do not consider that the customs are sufficiently distinctive to enable me to make the division. First, there are the Bushmen; secondly, the Hottentots; and thirdly, the Banthu. I found a link between the Bushmen and the South African Banthu family, and between the Bushmen and the Central African, but not between the Hottentots and the Banthu.

I will speak first of the Bushmen. The Bushmen inhabiting the eastern parts of the colony and a small portion of the Orange Free State belong to the pure race of Bushmen, which had been described before I ever entered South Africa. As is well known, the Bushmen are rapidly dying out. The reason of this is, that their great characteristic is a love of liberty and fondness for living in mountains. They have been accustomed to live among the hills and descend into the valleys to shoot game with poisoned arrows. When the Dutch came into South Africa and killed the game, they thought that the Bushmen would come down and work as servants, but instead of doing so they took refuge in their mountains, and when the game disappeared they shot the cattle of the Dutch settlers. The result was that the Dutch treated them rather severely, shooting them down like dogs. In this way thousands of Bushmen were slain, and not more than about two per cent. of the number existing a hundred years ago are now alive. Even those few Bushmen who at present are working as servants for farmers long to get away to the mountains, and I saw some who had been living for about fifteen years with farmers, but who had run away more than thirty times. I did not notice any evidences of a religion among these Bushmen. I only know that they have a kind of esteem for a certain snake. With regard to their clothing, it is

well known that a Bushman, when living in his mountains, uses only a piece of skin, or ostrich egg-shells formed into a small piece of cloth. His houses are caves high up in the crevices of the mountains. They use stone weapons and poisoned arrows, but the bows and arrows are of very simple construction when compared with those in use among the natives of North and South America and Japan. A piece of wood forming a cross-bow is connected by a sinew of an animal, and the arrow is poisoned. The arrow-head is generally made of bone and ivory, it is fastened to a thin piece of reed about $1\frac{1}{3}$ feet long, and the poison is obtained from bulbs, euphorbias, etc. They make stone implements of a very simple kind, and they sharpen their arrows on stones. They also have stones with a hole in the centre, through which they put a stick, and with this implement dig out the roots and bulbs which form their principal food. Thus in every way this race, which is dying out, appears very low in the scale of civilisation. But, strange to say, these Bushmen, who are regarded as the lowest types of Africans, in one thing excel all the other South African tribes whose acquaintance I made between the south coast and 10° south latitude. I have in my possession about two hundred sketches on wood and stone and ostrich shells, by various tribes, but everyone who knows anything about drawing must acknowledge that those which were done by Bushmen are superior to any of the others. They draw heads of gazelles, elephants, and hippopotami astonishingly well. They sketch them in their caves and paint them with ochre, or chisel them out in rocks with stone implements, and on the tops of mountains we may see representations of all the animals which have lived in those parts in former times. In many spots where hippopotami are now unknown, I found beautiful sketches of those animals, and in some cases fights between other native races and Bushmen are represented. From what I have said you may imagine that the efforts made to civilise the South African Bushmen have not produced any result commensurate with the trouble that has been taken. Mr. George Stow, the well-known South African geologist, made many valuable discoveries concerning the Bushmen and numerous drawings of their engravings on mountain-tops and painting in caves.

The second race are the well-known Hottentots. The Hottentot race inhabiting the southern parts of South Africa is divided into three tribes: the real Hottentots, the Griquas, and the Korannas. The real Hottentots we find in the western and south-eastern part of the colony. The Griquas inhabit the district near the junction of the Vaal and the Orange River, the so-called province of Griqualand West, and another region between Kaffraria and Basuto land, called No Man's Land.

At present the Hottentots, the Griquas, and half the number of the Korannas are subject to the English Government.

The Korannas, the third Hottentot tribe, live on the Vaal River as subjects of Griqualand West. We also find them on the Central Harts River living in a small independent kingdom, where they are known as the Korannas of Mamusa; their king is the son of Old Mashou (David Taaibosh), and in a north-westerly direction with their chief Shebor, as subjects of the Baralongs, a Betchuana tribe. If we look at this race what can we say of them? If I attempted to enter into details with regard to their religion, government, customs, agriculture, etc., I should occupy the whole evening, even if I confined my remarks to only two tribes. You will therefore excuse me if I only give a brief outline of all the tribes. When I spoke on this subject a few months ago, I had to acknowledge a very sad thing—that these tribes are dying out, but at the present time I hope that it will not be so any more; so with the Griquas and the Korannas. About the Hottentots, however, I cannot give such a good account. Of all the South African tribes the most numerous are those belonging to the Banthu family, but of the whole number, about forty, I know of none who have taken so eagerly to the vices of civilisation as the Hottentot race. The Betchuanas observe some of the virtues of the white man, but unfortunately the Hottentots adopt only his vices. Drunkenness is the chief cause of their dying out. About two years ago I was requested to write a few words on the "native question in South Africa." I stated that I believed it was absolutely necessary to stop the importation of intoxicating drinks. I suppose the suggestion was at that time regarded as a little too premature, because being a young man, of course I could not have formed a proper opinion; but I am very happy to say that now my friends in Griqualand West have come to the conclusion that it is necessary to have such a law in order to stop the increase of crime amongst those tribes of whom the Korannas were formerly the chief. Among those tribes I did not observe any sign of religion; but they have among themselves a kind of freemasonry. Some of them have on their chest three cuts. When they were asked what was the reason of it they generally refused to answer; but after gaining their confidence they confessed that they belonged to something like a secret society, and they said, "I can go through all the valleys inhabited by Korannas and by Griquas, and wherever I go, when I open my coat and show these three cuts I am sure to be well received."

The members of the society are initiated in this way. If a Koranna man who possesses cattle wishes to become a member

of the society he goes to a member and tells him what he desires. That man gives information to his neighbours, if they are also members of the society, and they assemble in the house of the man who is about to become a member. The candidate has to bring a large number of oxen and sheep, which are slaughtered and eaten. In former times they used to drink their home-made beer, but lately they used brandy. For about four days the festivities are kept up, then the cutting is made upon his chest, and from that time the man is recognised as a member of the family, and may travel wherever he likes, and be taken care of, though perhaps he has only a stick with him.

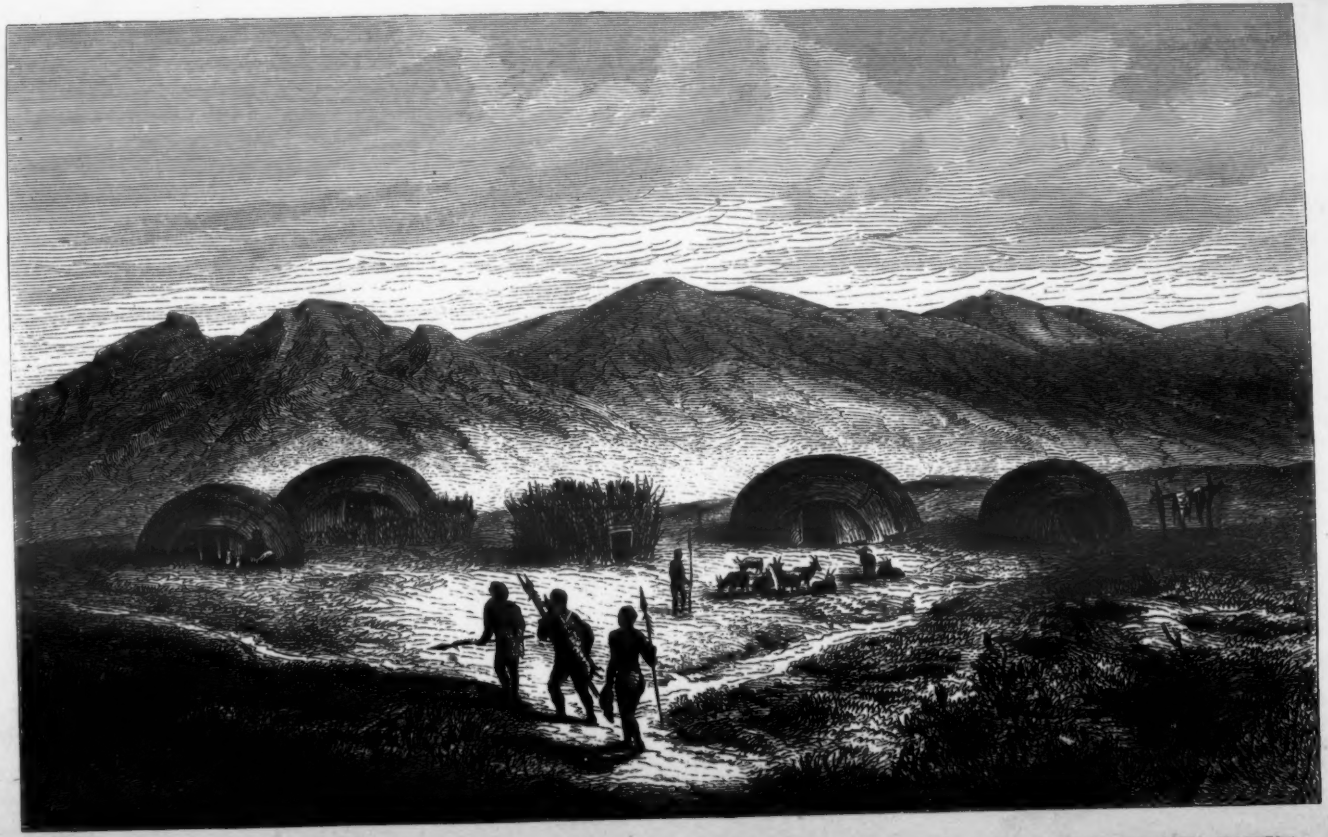
Notwithstanding that these tribes have been living for hundreds of years among white men, they have obtained no benefit whatever from that circumstance. Nothing more sad could be imagined than one of those Koranna villages, which are generally built upon bare mountain ranges. The form of the huts is shown in the accompanying illustration.* They measure $1\frac{1}{3}$ meters high by $3\frac{1}{3}$ meters long.

They make a few holes in the ground, forming a circle, and in those holes they fasten a few sticks—branches of trees, which they do not take any trouble to clear of the knots or anything else. These branches are stuck in the ground, and the points are fastened together, so that the whole affair has the appearance as shown in the illustration (Plate II). Then they cover this wood-skeleton with mats made of straw or rushes. They leave a low opening generally from the wind, and the hut is ready. There is no enclosure around it. The huts were made in the same way two hundred years ago.

In the centre of such a hut we find a small place about 2 feet in diameter, excavated like a ditch. In this hole they burn their wood and put their meat into the ash. In that way they prepare their meals. The family is generally clothed in European rags. They sit around, and the paterfamilias has a knife in his hand which he continually pokes into the piece of meat, pulls it out and smells it to see if the meat is "done." They have not now any remarkable national costume.

Among the Korannas and Hottentots I gathered only a very few curiosities. It seemed to me as though they had lost their former skill. I am sure they used to make weapons, and pots, and other things, but at the present time they make nothing except pipes. I saw some pipes very well made out of stone. They have learned to make these pipes from the Dutchmen who

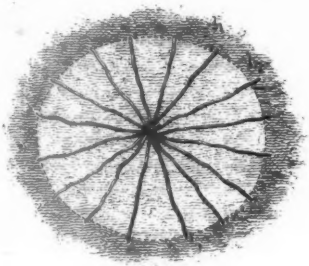
* The Institute is indebted to Dr. E. Holub for the presentation of the plates which accompany his Paper. They are from electrotypes of illustrations printed in his valuable work "Seven Years in South Africa," and have been prepared for the Author by the permission of Messrs. Sampson Low and Marston, the English publishers of the book.



KORANNA HUTS IN THE HARTS RIVER VALLEY. BARWA SERVANTS HOMEWARD BOUND FOR THE HUTS OF THEIR KORANNA MASTERS.

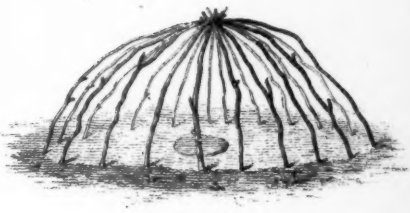
PLATE I.

To face p. 8.



1

View from top



2

Side View

Framework of Koranna Huts

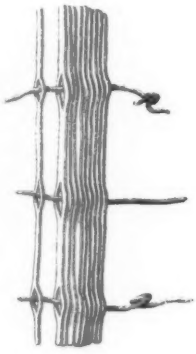
3

4

5

6

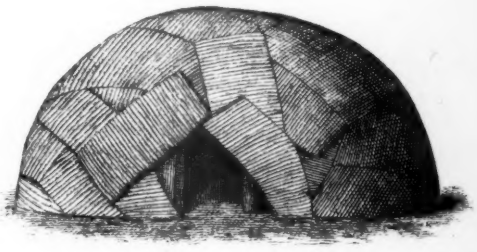
Entrances to Huts



7

Rush Mat

for covering framework



8

Koranna Hut complete

J. P. & W. R. Emslie, lith.

KORANNA HUTS.

make them on their farms. These were all the specimens of workmanship, but now that no more brandy is to be introduced among the Korannas I hope that a great change will take place; we may hope it will be extended upon the Griquas and Hottentots. These tribes inhabit parts of South Africa which are very well adapted to the breeding of cattle, and therefore I advised that the villages of the Korannas should be under certain supervision; that a constable should visit them about once a week, and see that they were kept clean, and that the Korannas did their work. The old Korannas appear to be just like children—seduced by everything that glittered and looked nice. Therefore I believe if they were properly led something might be made of them; but the sale of brandy must be stopped. I am sorry that I have but very little to say about the progress which they have made during the last score of years.

To finish our subject, even if in a few outlines only, I am obliged to leave already now the second section and pass over to the third race, which occupies by far the greatest portion of South Africa and belongs to the Banthu family. This race divides itself into many distinct tribes. Some of the tribes speak different dialects from the others, and cannot be understood by them. There is also a great difference in the external appearance of the different tribes; so that it was almost difficult to believe that they belonged to one and the same race. To this Banthu family I consider the Basutos belong, who live on the banks of the Caledon river, also the different tribes of Colonial Kaffirs living in the eastern part of the colony, the Zulus in Zululand proper and between the Limpopo and the Zambesi, the Betchuanas living in the Transvaal and in the centre of South Africa, the Makalakas between the Betchuanas kingdoms and the Matabele, and the Makalahari in the central portion of South Africa in the Kalahar country, and further the Manansa, the tribes north of the Zambesi, etc. Between these we find a tribe called the Masarwas in the northern part of the country towards the Zambesi, and called Barwas in the southern parts of the Betchuana countries, which I consider to be a link between the Bushmen and the Banthu family. The different tribes belonging to this race live partly as subjects to the British Government and the Orange Free State, and partly in independent empires or kingdoms. The Makalahari occupy the lowest position among the Betchuanas, being slaves to them like the Masarwas, Barwas, and Madenassana.

The Betchuanas who live between the Orange River and the Zambesi as our subjects or as belonging to the six independent kingdoms, confess that when they came into those parts they found the Makalahari, Barwas, and Masarwas there. They con-

quered the Makalahari and made them slaves. These Makalahari have to live in the more western parts, where game is plentiful, and have to kill the game and bring the spoil to their masters, who live in parts where water is more abundant. The Makalahari are the lowest of all the races belonging to the Banthu family. They live generally in small huts made of grass. A few sticks are driven into the ground and are covered with grass. They are employed either as hunters or as herdsmen to look after the cattle of the Betchuanas. By the Betchuanas they are considered as human beings, but not so the Masarwa. If a Makalahari servant behaves well and kills a good many ostriches for his master he is allowed to marry a Betchuana woman, but such a thing is never permitted to the Masarwa. A Masarwa and a Barwa man who is a servant to a Betchuana is not allowed to enter the town of the Betchuana king during the day-time, and has to wait outside, and can only go in after sunset. Among the Makalahari I did not observe any signs of religious ideas, but I noticed that the Masarwas believe in fetishes. They have pieces of bone which they carry about to give them strength, and make them good hunters, or heal them of diseases, etc. The Makalahari are a reddish-brown race, so that they have been called by some travellers Red Kaffirs.

From the Makalahari I turn at once to their masters. The Betchuanas live as British subjects, and not as Batlapins, in Griqualand West, and near the junction of the Harts River, under their chief Jantshe (jantje), and also as British subjects under their chiefs Mora and Gassibone. The most southern of the Betchuana tribes live as subjects to Griqualand West, but they also form a small independent kingdom, ruled over by a king called Mankuruane. Next to these we find a Betchuana tribe called the Barolongs, next to them the Banquaketse, next to them the Bakwena, and next to them the Bamangwato, eastern and western. With regard to their appearance, the Eastern Bamangwato and the four most southerly tribes seem to be most similar, but there is a great difference between the eastern and the western Bamangwato or Batowana. The eastern are brown; the western are quite black. The language which they speak is Betchuana. There are only three dialects, hardly worthy of notice. The Betchuanas employed themselves formerly as hunters and agriculturists, but at present, as no more guns and ammunition are introduced into their country, they are obliged to turn their attention almost entirely to agriculture. I regard the abolition of the sale of guns and ammunition to the natives as the best thing that could have been done, and as a great blessing to those tribes. The Betchuanas are peaceful tribes, but lately, like the Basutos who were also formerly peaceful, they have grown warlike. During the last fifteen years they have become so,

until they considered themselves equal to the white men. We have had a very severe dispute with one of these tribes. That would never have happened had they not been possessed of ammunition. This suppression of the supply of guns and ammunition to the natives has improved them in many ways. It improves the social position of the women. We know very well that the little agriculture that has been carried out among the Betchuanas has been done by the women, and the men were accustomed to buy two or three women simply to plant Indian and African corn sufficient to supply their households while they themselves employed their time in killing elephants or ostriches, and selling the tusks and feathers to traders, and lying otherwise idle. With the proceeds of the sale they bought more ammunition or European clothing. Some of them have attempted to imitate our houses, and I was very pleased to see it. Now, although no more ammunition is supplied to them, they cannot leave off using European clothing, and they have to try and gain in a different way the means of buying those things. They are therefore obliged to take to agriculture. Some of the tribes among whom ploughs were introduced became rich. I know one Betchuana tribe, called the Baharutse, from which all the present Betchuana tribes have risen by sub-devidation (banding off) with about eight hundred paterfamilias households, which has two hundred ploughs. When the village grows rich the other tribes see that the men can build small cottages and other necessary things, and they like to imitate them. But among the Betchuanas the men never allow the women to touch their cattle. The ploughs cannot be used except by the help of cattle, and therefore the men have now to do the heavy work. They plant not merely what they need for their households but in order to sell the produce, and I saw loads of Indian corn and wheat coming down to the Diamond Fields to be sold by the Baharutse. If we can turn the Betchuana tribes, of whom the greater part have been hitherto idle hunters, into peaceful agriculturists, I am sure that their example will spread among the other tribes, and it will be a great blessing for South Africa. I remember that during my last stay in the Diamond Fields I paid no less than £3 for a bag of Indian corn weighing 2 cwt. for my horses. In Port Elizabeth such a bag could be had for 5*s.* coming from America. But if all the tribes imitate the Baharutse and cultivate corn there will be no need to import corn at all into South Africa. I believe that they could even export some, and therefore I took the liberty to advise to make presents of ploughs to a few of the chiefs. I am sure if this were done agriculture would rapidly spread among the natives. We wish to live in peace with these

native tribes, but in order to do that they must cease to be hunters and warriors; they must be peaceful.

I have said that of these different tribes the most southern are the Batlapins, Ba and Tlapi, *id est*, the men of the fish, the people who esteem a fish. When the tribes belonging to the Banthu family are close neighbours to the Hottentots, as such they are generally misled by the latter, and so we find that the Batlapins became very bad in their habits. They were so given to drunkenness that whole families died of hunger, because when a trader arrived there with brandy, they would give him the very last sheep they had got for it. When brandy and similar articles are prohibited, we may hope that these Batlapins also will change for the better; the more so because these men are living near the Diamond Fields, where they can sell their grain, wood, cattle, reeds for thatching houses, etc., for very good prices. In this way they may greatly profit by the new laws.

To the north of the Batlapins we find the Barolongs, a tribe headed by a man named Montsie or Montsua. A long time ago he prohibited the sale of intoxicating liquors. These people are chiefly engaged in agriculture. In his kingdom I saw some Korannas staying with a chief of the name of Shebor, in the town of Konana. To the north of the Barolongs we find the Banguaketse, who were formerly hunters, but within the last two years they have taken a little more pains with agriculture. In that country we see two more tribes. To the east, near the ruins of the town of Kolobeng, described by Livingstone, we find the Manupi, and to the west the Baharutse, living in Moshaneng, the same tribe as the Baharutse, living in the town of Linokana in the district Marico.

To the north of the Banguaketse we find a tribe of the Bakwena chiefly engaged in hunting, and in their kingdom we find several Betchuana tribes like the Makhosi, Bakhatla, Batloka. About two years ago this tribe had to suffer from famine, and this is another reason why I consider it a very wise measure so stop the supplies of arms to the interior. During the last few years the game have been so exterminated between the Zambesi and the Orange River that really a traveller might go right up to the Zambesi, and unless he was a very good shot and had splendid horses he might starve, although a few years ago game was exceedingly plentiful. It is true that many of the people complained that we did not bring any more ammunition, because the ivory and the ostrich feather trade has decreased to a considerable extent. But if the elephant had continued to be hunted so continuously, all the elephants would sooner or later have been extirpated, and then the whole trade in ivory would have come to a standstill. Now is the time, when the natives

have no guns and ammunition, to show them that there is a better use for these animals than killing them. It is better to tame the elephants and breed ostriches, as is done with the latter in the southern part of Africa. When elephants carry our goods, the cost of transport will be much less than it is at present by bullock wagons, because occasionally a distance of 70 or more miles has to be traversed without water; further, they will turn very useful to traverse countries infested by the Tetse fly. When the crops fail and otherwise there would be a famine, tame elephants or tame ostriches may be turned into ready money; but if they kill the last head of game, where can they take refuge? They will become a burden to other tribes and to their white neighbours.

Farther to the north are the Bamangwato tribes. These are hunters, and to a small extent agriculturists, and under the régime of the present King Khama, they promise to become the foremost of the Betchuana tribes. I never saw a native king do so much to abolish the native customs. He takes the greatest precautions that no brandy shall be brought into his kingdom, and does his best to abolish the old customs that have been existing for many years in the Bamangwato country. He has always proved a good friend to Englishmen, and punishes in a very severe manner any insult to a white man. He has certain rules by which cases are decided. If it is proved that a native has stolen anything from a white man, he orders him to repay double. If, for instance, he steals an ox, he must pay back one extra for having deprived the white man of it for two or three days.

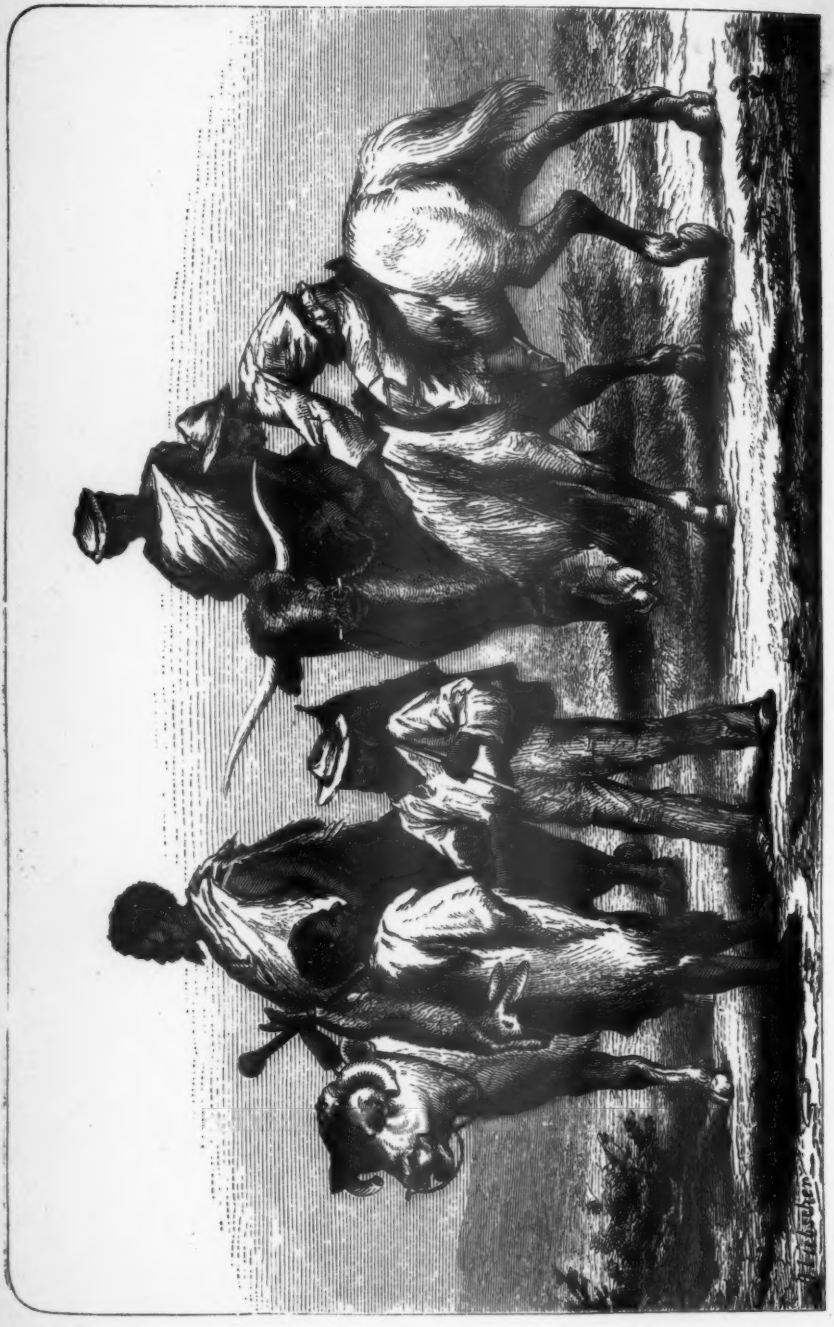
The second Bamangwato tribes differ from these, inasmuch as they are more fishers than agriculturists. They fish especially in the Zooga River and in the Lake N'Game water and its tributaries. Altogether they have more similarity with the tribes living to the north. In the eastern Bamangwato country we have altogether six tribes, the real Bamangwato, and then the Makalakas, as refugees from Matabela land, who have been residing in the town of Shoshong in large numbers. They have behaved badly, having taken both sides in the contest between Sekhomo and his son Khama. Besides these we find the Madenassena, a native tribe with very dark skin. Their language has a similarity to that of the Masarwas, and therefore with that of the Bushmen. Besides the Masarwas, which are a link between the Banthu and the Bushmen, we find a tribe near the Victoria Falls called the Manansa. At present there are only a few villages there, but up to 1837 they formed a large kingdom, which was destroyed by Moselikatse. The Manansa are a very peaceful tribe, and are entirely different from the Betchuanas, notwithstanding that they belong to the Banthu

family. In their language and their customs also there is a great difference. The Betchuanas regard their women only as slaves, but since ploughs have been introduced the women have gained more respect, and their work is confined more to the homes. Whites who have lived among them notice that those who have been instructed by missionaries and have been baptized, treat their wives better than they used to; still, I saw many Christian women doing the hardest work. The introduction of ploughs has improved the position of the women among the Betchuanas, as it was always the case among the Manansa. In former times they were splendid agriculturists, and it was their pride to be peaceful. They hated to fight, and they killed their game in traps or holes in the ground. When the Matabele came into their country the Manansas threw their assegais to the ground and said, "We do not want to fight, come into our houses." The Matabele said, "There is something wrong, they only say

Fig. 1.

this that they may have time to gather more strength"; and that same day they threw the king of the Manansas to the

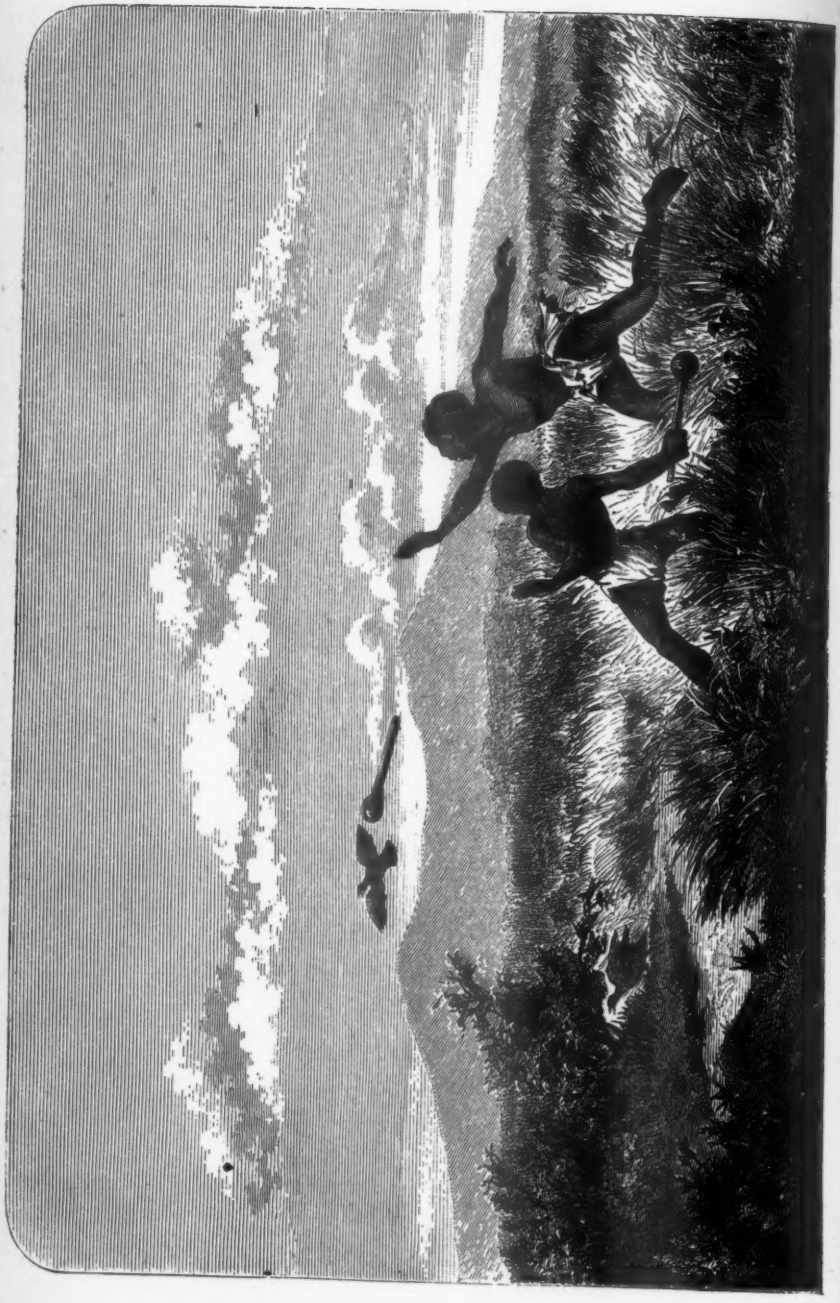
PLATE III.



BATLAPIN MEN WHEN TRAVELLING.

To face p. 15.

PLATE IV.



BATLAPIN BOYS THROWING THE KIBI.

To face p. 15.

BATLAPIN BOYS THROWING THE KIBI.

PLATE V.

BAROLONG MEN ON THE KONANA RIVER HUNTING ZEBRAS.

To face p. 15.

ground, tore open his bowels, and put his heart on his lips, saying, "You are a false man; you have two hearts." Though the country near the Victoria Falls is very beautiful, we find only a few Manansas. At the present time, when the Matabele come into their land, the Manansas run as far as possible to the west and say, "We are subjects of the Bamangwato," but when they are pressed by the Bamangwato, they go to the east and say, "We are subjects of the King of the Matabele." They do this because they do not care to fight. They are looked upon by the other South African tribes with great disdain, as cowards; but I may say that of all the natives that I had with me as servants—Zulus, Hottentots, Betchuanas, Korannas—I never had such useful men as these Manansas. I collected about three hundred words and phrases from their language. So much for the independent Betchuana Empires.

The illustrations represent scenes from the life of the Betchuana; they are drawings from the book of my wanderings in South Africa. Fig. 1 in text represents a Barolong girl from the vicinity of Morokana, gathering locusts; fig. 2, Batlapin men working a carosse (mantlet made of antelope-skins). Plate III, Batlapin men when travelling; Plate IV, Batlapin boys throwing the Kiri; and Plate V, Barolong men living on the Konana river hunting zebras.

Next to the Manansas we have the Makalakas belonging to the Banthu family, but their language is very different from that of the Betchuanas. These Makalakas were living under several kings, and are the real agriculturists among the natives of South Africa. They were very peaceful, and as agriculturists and cattle breeders really excelled. They were living on the border of a very peaceful kingdom, inhabited by natives called Mashonas. In their workmanship, in their cotton gardens, and in their working of ivory and metals these Mashonas surpass all the other South African tribes. These two peaceful kingdoms bordered one on the other; but from the south there came what I would call a bird of prey, and destroyed for ever the peace and welfare of these tribes. The man who did so was a Zulu, and we know that a Zulu chief named Moselikatze settled down in the district where were residing the peaceful Makalakas. He came there, being beaten by the Dutch; he retired into these parts on the banks of the left-hand tributaries of the Limpopo. When he came there, he had only forty Zulu warriors and some Betchuana slaves left, and a few head of cattle; but at the present time the Zulu kingdom of the Matabeli reaches nearly from the Zambesi to the Limpopo, extending nearly four hundred miles from west to east, and is continually growing. When he first arrived he remained for some time in the forest, and then at night set fire to the huts

of the natives; the men ran out, and as they did so were killed by the Zulus. The women and children were taken possession of, and the result was that the peaceful Makalakas recognised the Zulus as their masters. Moselikatse's kingdom increased towards the east and north-west, and he was continually enlarging his power. After I had seen the doings of the Matabele, I took the liberty, when I came down to South Africa, to publish accounts of them,

Fig. 2.

but this was disliked by a few white men who lived in the residence of the king and who did not like my publishing it. Quite recently I heard more on the subject, and will have to deal with this matter more minutely. These Makalakas live in several small tribes under the Matabele. They are still agriculturists, but have only a few heads of goat and sheep, and these men, who were recognised by all the Betchuanas as very good men and neighbours, are now some of the greatest villains

in South Africa. There are no greater thieves than they. The Matabele have caused this.

The Matabele are at present a mixed race, and we find some of them dark-brown, some light-brown. In their features they are similar to many other tribes.

To the east of the Matabele is the kingdom of the Mashonas. Notwithstanding that it is a very unhealthy region in South Africa, it abounds with game, and is extremely fertile, rice and cotton being cultivated by the natives themselves. I know gold is to be found there, and I saw pieces of alluvial gold. I would say that there is a great future in store for that land. I endeavoured during my journeys to do all I could to open up the country to trade and commerce, but it was a very difficult thing to do. We know that on the east fever is very prevalent, and round the south is the Tsetse fly. From the Zambesi, trade might be carried on, but the Matabele are spreading in this direction, and would not allow white men to go into the country. The safest way is to go in from the south-east, to cultivate these lands for eight months, and during the fever season return into the Matabele country. The King of the Matabele, however, said that no white man should come in and settle down. He was afraid that the white men would help the Mashonas when they saw the cruelties practised upon them. I used to think that this opening up of trade could only be done by force; but I thought differently after the Zulu War, when I visited Cape Town and had an opportunity of meeting Sir Bartle Frere. He asked my opinion about these tribes, and when we came to talk about the Matabele I took the liberty to mention the following: "My opinion is that this king will now allow white men to come into the Mashona country, and allow them to trade, for two reasons: first, because since the power of the Zulus has been broken, I observed among the natives that the white men had gained much more respect; and secondly, because no more guns are to be supplied to the tribes, so that the king need not be afraid that the Mashonas will fight." When I came to London and had an interview with a few English gentlemen, I spoke about these matters, and was requested to make mention of them in one of our papers, which I did, reminding the public of the above; and when I was called upon by the Royal Geographical Society to deliver a second lecture, I received information from South Africa that the king of the Matabele had thrown Mashona land open. I hope this will be confirmed and made use of, and that in a short time we shall see great benefits accruing from it.

Besides those tribes of the Banthu family, there are other

very numerous tribes living in the Transvaal—the Baralongs, the Bakhatla, and others, most of whom I have already mentioned. Going farther to the south we find in one of the provinces of Cape Colony, on the banks of the Coledon, a tribe called the Basutos, who belong to some of the best tribes of the Banthu family. These Basutos accepted more of the virtues than of the vices of the white men. Moirosi, the rebel chief, had under him a conglomeration of all the dissatisfied elements of the Colonial Kaffirs—run-away servants and others, so that when we speak of the Basutos we must leave Moirosi out of consideration. This is a country where hundreds and thousands of bushels of corn are produced yearly, and we may hope that the other tribes of the Betchuanas will follow the example of the Basutos. The Basutos belong to the same tribe as the Makololo, whom Livingstone mentioned as living on the Upper Zambesi. These Makololo came from the south and conquered the tribes, and established a new kingdom. But the Makololo have been exterminated by the Marutse. The accompanying woodcut represents a medical man among the Marutse, who are also a

Banthu-tribe. Going lower down we find other tribes belonging to the Banthu family. They are pretty well known as Fingoes, Gaikas and Galekas, Pondos, etc.

Then we have the Zulus. I have mentioned already that

there were two Zulu kingdoms—that of Cetewayo and that of La-Bengola. That the Zulus are recognised as the best warriors among the Banthu families is true. All the tribes in the Marutse kingdom are afraid of the Matabele. When I came near to the junction of the Chobe with the Zambesi, the king sent messengers to me, and on their return asked them "Has he servants?" When they answered "Yes," he said, "Which tribe are they—Matabele or Betchuanas?" They said "They belong to the Manansa tribe," and then the king said that I might come in. He alluded to Livingstone, who is known there as "Monari," and that traveller's memory is still dear to them. I said to the king, "How came you to inquire if my servants belonged to the Zulu tribe or the Betchuanas?" He replied "If you had had Zulus, I would never have allowed you to come into my kingdom."

The very short time at my disposal has compelled me to give but a rough outline of the whole subject; if I had had more time, I should have been better able to deal with it and to give you a clearer idea of the different tribes. You will therefore excuse me if I have omitted many points which I otherwise might have dealt with.

Discussion.

Mr. Keane took the opportunity of asking Dr. Holub whether he had detected amongst the natives any instances of a tufted growth of hair. Many ethnologists still held that this peculiarity was characteristic of certain Negro and Negroid races, and especially of the Hottentots. An argument for the affinity of the Oceanic and South African dark races had even been based on the assumed reality of the phenomenon. As the point had given rise to much discussion, it would be satisfactory to know whether such an original observer could help towards its definite solution. He would also like to know whether the clicks were in use amongst the Bantu tribes as far north as the Zambesi. These sounds were supposed to be originally peculiar to the Bushman language, whence some of them had passed into the Hottentot and south-eastern Bantu dialects (Zulu and Ama-Khosa); but apparently none of the northern Bantu tribes had adopted them. Touching Dr. Holub's statement that, though often differing widely in physique, all the Bantu tribes must still be regarded as of one race inasmuch as all spoke varieties of the same language, he thought that this view gave undue importance to the linguistic element. No doubt the Bantu language had spread over the whole Continent from the Equator to the Cape and from the Swaheli Coast to the Ogoway Delta. But this would seem to have been brought about by conquest and other influences rather than by diffusion of a single stock over such a vast area already occupied by Bushmen, Hottentots, and

many Negro races. Hence it seemed safe to regard the Bantu rather as a linguistic than a racial family, corresponding somewhat to such collective terms as Aryan or Finno-Tatar elsewhere, terms to which few Anthropologists would now feel inclined to attach any great ethnical value.

Mr. CORNELIUS WALFORD believed that famine would be found upon inquiry to have operated largely upon the migration of race in different parts of the globe and in all periods of time. Very extensive migrations had resulted from this cause in India in modern times. This law, founded on the force of necessity, he thought had not been heretofore regarded sufficiently either by Ethnologists or Anthropologists: its operation under certain conditions might be more potent than conquests; and more difficult to explain in later times, as regards people who keep no records. Such traditions, however, were likely to be preserved among the people themselves; and the facts might therefore be ascertained by travellers who would keep the point in their minds. He regarded Dr. Holub as the modern Livingstone of African travel, and as he was young, and in robust health, we had a fair right to look forward to much more information of a valuable character from him in due course.

NOTES *on the* WESTERN REGIONS. Translated from the "Tsëën Han Shoo," Book 96, Part 1. By A. WYLIE, Esq.

THE intercourse of China with the Western regions commenced in the time of the Emperor Woo-te (B.C. 140-87). The thirty-six kingdoms then opened up became afterwards gradually subdivided into more than fifty; all lying to the west of the Heung-noo, and south of Woo-sun. Along the north and south run great mountains, and through the centre flows a river.* From east to west the land is more than 6,000 *le* in extent, and from north to south it is over 1,000 *le*. On the east it touches the confines of China at the Yuh gate and the Yang barrier.

On the west it is limited by the Tsung-ling mountains. The Southern mountains† commence on the east from Kin-ching,‡ and are connected with the southern hills of China. The river has two sources, one of which rises in the Tsung-ling mountains,§ the other in Khotan.‖ Khotan lies at the foot of the Southern mountains,

* The Tarim.

† The Kwăn-lun range.

‡ This is still represented by the district of Kin in the prefecture of Lan-chow in Kansuh province. The district city is in N. lat. 35° 55′, E. long. 104° 8′.

§ The Kashgar river.

‖ The Yarkand river.

and the river runs northward till it joins its confluent from the Tsung-ling, and then flows eastward into Lake Lob, which is also called the Salt Marsh. This is over 300 *le* distant from the Yuh gate and the Yang barrier, and is 300 *le* in length and breadth. The water is stationary, neither increasing nor diminishing in summer or winter. The river is then said to run under ground, and issue again at Ts'eĭh-shĭh,* where it becomes the Yellow river of China. From the Yuh gate and Yang barrier there are two roads through the Western regions. That by Shen-shen, skirting the River Po, on the north of the Southern mountains, and leading west to Sha-keu,† is the Southern road. After this road passes the Tsung-ling mountains, it leads to the country of the Ta Yuĕ-she and Gan-sĕih. From the Royal Palace of Anterior Keu-sze,‡ following the course of the River Po, in the direction of the Northern mountains as far as Soo-lĭh,§ is the Northern road. This road passing westward across the Tsung-ling mountains, goes on to Ta-wan (*i.e.*, Fergana), K'ang-keu (*i.e.*, Sogdiana), and the Yen-ts'ae (Alan) country. In Yen-ke‖ and the various kingdoms of the Western regions the land is covered with cities, villages, cultivated fields, and domestic animals; and the inhabitants differ in their customs from the Heung-noo and people of Woo-sun. Hence they were all employed in the service of the Heung-noo. The Jĭh-ch'uh Prince, on the western border of the Heung-noo territory, appointed a Slaves' Protector General, whose office was to rule the Western regions, and who always dwelt in the dangerous part of Yen-ke. He had to levy the taxes on the cultivated land, and received of the wealth of these kingdoms.

From the time of the decline of the Chow dynasty, the barbarians of the North and West had dwelt intermixed on the north of the King and Wei rivers.

When Che-hwang of the Ts'in appropriated the interjacent countries, he built the Great Wall to form the boundary of China. But it only came west as far as the River T'aou.¶

The Han succeeded, and in the time of the Emperor Woo-te, the barbarians on all sides were invaded, the dignity of the empire was extended, and Chang Keen first opened up the way into the Western regions.

* Literally "Accumulated stones," the name of a mountain.

† This represents the modern Yarkand.

‡ This was the country known by the name of Kaou-chang during the T'ang dynasty, and was in later ages inhabited by the Ouigour nation.

§ The ancient name of Kashgar.

‖ On the site of the present Kharashar.

¶ A large affluent of the Yellow river, west of the city of Lan-chow in Kansuh province, flowing near the town of T'aou-chow, lying south-east of Kokonor.

After him the Light-horse General attacked and subdued the right-hand land of the Heung-noo (B.C. 121). The Kings of Kwăn-ya and Heu-choo then submitted to the Han, when the populations of their kingdoms were removed, and the building of the Wall was begun from Ling-keu westward. The region of Tsew-tseuen was first established, and afterwards gradually the people were removed in to fill it. He also divided the three territories of Woo-wei,* Chang-ya,† and Tun-hwang into four regions, for which he made two barriers.

After the Urh-sze General had reduced Ta-wan (B.C. 104), the powers in the Western regions were greatly afraid, and most of them sent envoys to China with offerings of tribute; while the Han imposed office on more of the Western region potentates. In consequence of this, resting stations were erected at intervals, from Tun-hwang westward as far as Lake Lob; and at both Lun-t'ae‡ and K'eu-le there were several hundred agricultural troops. An envoy was appointed as Deputy Protector, to rule and defend, by sending envoys to the outside countries.

In the time of Seuen-te (B.C. 73-49), the Cavalry leader Wei, was sent with a commission to protect the several kingdoms from Shen-shen westward; when he subdued Koo-sze. He did not utterly exterminate it, however, but divided the nation between the two Kings of Anterior and Ulterior Keu-sze. As for the six nations on the north of the mountains, the Han at that time only undertook to protect the Southern road, and could not include all on the Northern road. Yet the Heung-noo were not at rest.

After this the Jĭh-ch'uh Prince rebelled against the Shen-yu, submitted to China with all his followers, and was received by Ching Keih, the envoy who protected the country west from Shen-shen. On his arrival in China, the Jĭh-ch'uh Prince was created Marquis of Kwei-tih, and Ching Keih was made Marquis of Gan-yuen. This took place in the year B.C. 59.

Ching Keih was then appointed to defend the Northern road, and hence he was entitled Governor General, a title that originated with the appointment of Ching Keih. From this time the office of Slaves' Protector General was abolished. The Heung-noo became still more weakened, and were unable to approach the Western regions. The military colonies were therefore removed and planted in the countries of Pĭh-seih, Keen-pe, and Sha-keu. The Deputy Protectors of the military colonies were first attached to the Governor General. The Governor General

* Now represented by the prefecture of Leang-chow in Kansuh province; of which the chief city is in N. lat. 37° 59′, E. long. 102° 48′.

† Now represented by the prefecture of Kan-chow in Kansuh province, of which the chief city is in N. lat. 39° 0′ 40″, E. long. 100° 56′.

‡ A military colony to the west of Yen-ke, which is represented by the present Yugur, about 60 miles east of Kuchay.

took the oversight of the affairs of Woo-sun, (Sogdiana,) and the various foreign countries. When any sign of disaffection was manifest, he reported the same to headquarters. If it was practicable, the matter was amicably adjusted; if it was a case for coercion, then he attacked them. The Governor General had his residence in the city of Woo-luy,* distant from the Yang barrier 2,738 *le*, and in proximity to the officer of the agricultural colony of K'eu-le. The land is rich and productive, being medium-class land of the Western regions. Hence the Governor General had his seat there.

In the time of the Emperor Yuen-te (B.C. 48-33), the *Woo-ke* Deputy Protector was also appointed, and a military colony established at the Royal Palace of Anterior Keu-sze. About this time, Tsze-leih-che, the Heung-noo King of Eastern Poo-luy,† submitted to the Governor General with more than 1,700 followers. The latter divided the western part of the kingdom of Ulterior Keu-sze into Woo-tan and Tsze-le, in which he placed this new accession. After the reigns of Seuen-te and Yuen-te, the Shen-yu was styled a border vassal, and the Western regions gave in their submission. The extent of the land, the hills and the rivers, the kings and marquises, the number of the people, and the distances by the roads were all carefully examined and noted.

Outside the Yang barrier the inhabitants of the adjacent country were first called Chŏ Keang.‡ The King of Chŏ Keang was called Keu-hoo-lae, and lived at a distance from the Yang barrier of 1,800 *le*, and from Chang-gan 6,300 *le*, in a secluded part on the south-west, away from the high road. The kingdom consisted of 450 families, comprising 1,750 individuals and 5,000 well-trained soldiers. On the west it was bounded by Tseay-mŭh.§ The people removed their flocks for the convenience of water and pastures. They did not cultivate their fields, and depended upon Shen-shen, Tseay-mŭh, and Kŏ-shan for iron, with which they made military implements. Their soldiers were armed with bows and lances, and wore knives, swords, and helmets. Proceeding north-west from thence to Shen-shen, the high road is reached.

Shen-shen.‖

The original name of the kingdom of Shen-shen was Low-lan.

* On the site of the modern Tsetar, about 90 miles west of Kharashar.

† The modern Tehanggi.

‡ A division of the country of Turfan.

§ It has been suggested by Mr. Kingsmill that this represents the district of Shemotóna mentioned by the Buddhist traveller Heuen-chwang, lying between Khotan and Lake Lob. ("Chinese Recorder," vol. vii, p. 341.)

‖ Although we may not be able to identify this place with certainty, we have

The capital is the city of Woo-ne, which is distant from the Yang barrier 1,600 *le*, and from Chang-gan 6,100 *le*. The kingdom contains 1,570 families, comprising a population of 14,100, with 2,912 trained troops, a Guardian Marquis, a Marquis of Keĭh-hoo, a Protector General of Shen-shen, a Protector General for repelling the Keu-sze, a Right Tseay-keu, a Left Tseay-keu, a Prince for repelling the Keu-sze, and two Interpreters-in-chief. The seat of government of the Chinese Governor General lies to the north-west 1,785 *le*. The kingdom of Shan is distant 1,365 *le;* and Keu-sze lies to the north-west 1,890 *le*. The land is sandy and salt, and there are few cultivated fields.

yet sufficient indications to give an approximate idea of its position, as being south of, and not far distant from Lake Lob. It is mentioned under the same name by the Buddhist traveller Fa-heen in his journey to India; who places it at seventeen days' journey, or 1,500 *le* from Tun-hwang, a known fortress in N. lat. 39° 40′, E. long. 94° 50′. According to the text, the capital is 6,100 *le* from Chang-gan the metropolis of China, now Se-gan. Measuring off this distance according to the Han *le*, brings us to about 88° E. long. or 7 degrees west of Tun-hwang, from which Fa-heen began his seventeen days' journey; giving him an average of somewhere about twenty-five miles a day, which we may assume is not far from the truth. Heuen-chwang, another Buddhist pilgrim, who passed through it on his return journey, gives the distance by road from Khotan—another known point—about 2,530 *le*. The country is spoken of by Heuen-chwang under the original name of Low-lan, in which he places the city of Na-fŏ-po. We have probably a transmutation of this latter name still remaining, in the lake "Lob" or "Lop," as suggested by Colonel Yule. The "She ke," book cxxiii, fol. 2, tells us that "there were cities with suburbs belonging to Low-lan and Koo-sze, on the banks of the Salt Marsh." Now as Heuen-chwang's *Na-jŏ-po* appears to represent the Sanscrit *Lavapa*, "Salt water," we have in this a translation of the Chinese *Yen-tsĭh*, or "Salt Marsh." Marco Polo, who passed through the place in the 13th century, speaks of it as a large town on the edge of the desert, and adds:—"On quitting this city, they enter on the desert." This perfectly agrees with the position of Shen-shen, as given by Fa-heen. In some notices collected by Mr. Wathen from Turkestan pilgrims at Bombay, he states that—"Lopp is remarkable for a salt-water lake in its vicinity;" and in an Itinerary presented to the Geographical Society by Mr. Johnson, in 1866, Lob is noted as a "village, by a large lake with fish." These several notices seem clearly to prove that there is still a village of Lob, the representative of a former city on the border of the lake; and that this is near about the site of the ancient capital of Shen-shen in the time of the Han. A variety of confirmatory statements might be gathered from Chinese works; but it will be sufficient to quote from the "Shwuy king," as edited by scholars of the present dynasty; where we read:—"The Tarim debouches into the marsh. The marsh lies on the north of the kingdom of Laou-lan, at the city of Woo-ne. Formerly the popular name of this lake among the inhabitants was Laou-lan lake."

Five days before reaching Lob, Marco Polo passed through the city of Charchan. This has been identified by Colonel Yule with a place still existing under the name of Chachan, 95 miles from Lake Lob. Mr. Kingsmill tries to identify this with Fa-heen's Shen-shen; but the distance from the great desert is too great, although we may possibly have in it a trace of the ancient name, and it may even have been included within the boundaries of the kingdom, as it existed in the time of the Han. ("Record of the Buddhistic Kingdoms," by Herbert A. Giles, p. 3.—"Mém. sur les Cont. Occid.," trad. par M. Stanislas Julien, tom. ii, pp. 247, 427, 428, &c.—"The Book of Ser. Marco Polo," by Colonel H. Yule, C.B., 2nd edition, vol. ii, pp. 200-204.—"Journal of the Royal Geographical Society," vol. xxxvii, p. 44.—"The Chinese Recorder," vol. vii, p. 343.)

The country relies on the neighbouring kingdoms for cereals and agricultural products.* The country produces jade,† abundance of rushes, the tamarix, the *elæococca vernicifera*, and white grass. The people remove with their flocks and herds for pasturage where they can find sufficiency of water and herbage. They have asses, horses, and many camels. They can fabricate military weapons the same as the people of Chŏ Keang.

At first the Emperor Woo-te, under the influence of Chang Keen's representations, was very desirous to cultivate an intercourse with Ta-wan and the interjacent countries, and the envoys of the respective nations followed each other continuously, more than ten in number in the course of a year. Low-lan, in concert with Koo-sze,‡ however, being on the high road, harassed these officials, attacked and robbed the Chinese envoy Wang K'wei and his party, and on various occasions acted as eyes and ears to the Heung-noo, causing their troops to intercept the Chinese envoys. The latter were profuse in their statements that the kingdom contained cities and towns, and that the military were weak and might easily be vanquished. Woo-te thereupon sent Chaou Po-noo, the Marquis of Tsung-peaou, to take command of the cavalry of the dependent States with the local troops, numbering several tens of thousands, and make an attack on Koo-sze. Wang K'wei, who had several times suffered at the hands of Low-lan, received the Imperial order to assist Chaou Po-noo in the command of the army. The latter advancing at the head of 700 light-horse, seized the King of Low-lan; then subjugated Koo-sze, and, relying on the prestige of his fierce troops, he overawed the States dependent on Woo-sun and Ta-wan. Chaou Po-noo was further promoted Marquis of Tsŭh-ya, and Wang K'wei was made Marquis of Haou. About this time the Chinese erected fortresses and entrenchments at intervals between that country and the Yuh gate. Low-lan having submitted, presented offerings of tribute to China, which the Heung-noo hearing of, sent troops to attack them. On this the King of Low-lan sent one son as a hostage to the Heung-noo, and another to China.

Afterwards, when the Urh-sze General went to attack Ta-wan, the Heung-noo wished to intercept him. The General's troops, however, presented such a formidable appearance, that they did

* Fa-heen says of Shen-shen:—"The land is rugged and barren." Marco Polo speaks of the province of Charchan as sandy, and says:—"Quitting Charchan [the capital city presumably], you ride some five days through the sands, finding none but bad and bitter water." ("Marco Polo," *l.c.* p. 201.)

† Marco Polo says of Charchan:—"The province contains rivers which bring down jasper and chalcedony, and these are carried for sale into Cathay, where they fetch great prices."

‡ The same as Keu-sze.

not dare to take the initiative, but sent cavalry to wait in Low-lan till the Chinese envoy should again pass, wishing completely to cut off his return. The Chinese Military Chief, Jin Wăn, had then command of the military colony at the Yuh gate barrier; and when the Urh-sze General was afterwards obstructed, Jin Wăn ascertained the facts from some captives and reported the same to the capital.* The Emperor issued a rescript ordering Jin Wăn to lead troops by a convenient road, and capture the King of Low-lan. The General proceeded to the city gate, where he reproached the King for his conduct, but the latter replied: "When a small State lies between two great kingdoms, if it has not an alliance with both, it cannot be at rest. I wish now to place my nation within the bounds of the Chinese empire." The Emperor confiding in his words re-established him in his kingdom, and commissioned him to keep a watch over the movements of the Heung-noo. From this time the Heung-noo had no great intimacy with, or confidence in, Low-lan.

In B.C. 92 the King of Low-lan died, when the people of the country came to request the son, who was residing as a hostage in China, to succeed to the throne; but the hostage Prince had always been treated as a criminal while in China, and as a punishment was confined in the Silkworm-house Palace. Hence, instead of sending him home, the Chinese informed the applicants that the Emperor was so tenderly attached to his attendant prince, that he could not part with him, and requested them to install the next son in the dignity. When the King of Low-lan was appointed, the Chinese again reproached the hostage prince with the fact that his father had also sent a son as hostage to the Heung-noo. On the death of the next king, the Heung-noo first hearing of it, sent their hostage prince back, who succeeded to the throne. China then sent an envoy with a rescript to the new king, ordering him to pay a visit to Court, when the Emperor would bestow upon him most liberal gifts. The wife of the former king by a second marriage, who was consequently the step-mother of the present king, said to him: "Your royal predecessors sent two sons to China as hostages, neither of which returned. Is it indeed reasonable that you should now go to Court?" The King, taking her counsel, discharged the envoy with the remark: "Having newly acceded to the throne, the affairs of the kingdom are not yet adjusted. I wish to wait a year or two, after which I will have an audience with the Emperor." Now the extreme eastern border of the kingdom of Low-lan where it approached nearest to China, was opposite

* Compare the "Journal of the Anthropological Institute," January, 1874, p. 436.

the Pih-lung mound, where there was a scarcity of water and pasture; and it always fell to its share to provide guides, to carry water and forward provisions to meet the Chinese envoys; but being frequently exposed to the oppressive raids of the soldiery, they at last resolved that it was inconvenient to hold intercourse with China. Afterwards, again on the revolt of the Heung-noo, they several times intercepted and killed the Chinese envoys. The King's younger brother, Hwuy-too-ke, who had submitted to the Han, communicated all these facts to the Chinese.

In B.C. 77 the Generalissimo, Ho Kwang-pĭh, sent Foo Keae-tsze, the Superintendent of Ping-lo, to stab the King. Foo Keae-tsze hastily selected some bold and daring followers, and having received gold and silks, circulated the report that the object of his mission was to make presents to a foreign State. Having reached Low-lan, he deceived the King with the pretence that he had presents for him. The latter, delighted with the event, unsuspectingly invited Foo Keae-tsze to drink wine. When the King was intoxicated, Foo removed the royal screen and told two of his sturdy followers to stab him from behind. The nobles who were sitting round all fled. Foo Keae-tsze then made an announcement, saying: "The deed just accomplished is a retribution for the King's crimes against the Han. The Emperor sent me to put him to death. You must set up the King's younger brother, Hwuy-too-ke, now in China, as King." The Chinese troops, who had just arrived, not daring to move, he gave orders that the kingdom of Low-lan should cease to be. Foo Keae-tsze then decapitated the King, and having committed the head to the wardens, it was suspended at the north gate, and Foo Keae-tsze was promoted Marquis of E-yang. Hwuy-too-ke was then set up as King, and the kingdom re-established under the name of Shen-shen, for which a seal of investiture was engraved. One of the ladies of the royal palace was bestowed on him for a consort. Carriages, cavalry, a baggage train, ministers of state, generals, troops, and officers of every grade escorted him outside the east gate, and sent him away as the first of a new line. The King himself presented the following request to the Emperor: "I have resided long in China, and now that I am returning weak and single-handed, while there is still a son of the former King living, I fear I shall be assassinated. In our kingdom there is the city of E-tun, where the land is rich and productive; may I request the Han to send a general to plant a military colony there, and collect the grain, so that your servant may rely upon his prestige?" The Han monarch thereupon sent a cavalry leader with forty subordinates to cultivate the fields at E-tun, in order to guard the place and

soothe the people. After this a Protector General was appointed and this was the beginning of placing officers in E-tun.

Following the high road from China, through Shen-shen, westward to Tseay-mŭh is 720 *le*.* Beyond Tseay-mŭh the five cereals are everywhere cultivated. The land, herbage, trees, the animals they rear, and the military implements they make, are all much the same as in China, with some differences. A record of these matters is given below.

Tseay-mŭh.†

The capital of the kingdom of Tseay-mŭh is the city of Tseay-mŭh, which is distant from Chang-gan 6,820 *le*. The State contains 230 families, comprising 1,610 persons, with 320 trained soldiers, a Guardian Marquis, a Right General, a Left General, and an Interpreter-in-chief. The city is distant from the seat of the Governor General on the north-west 2,258 *le*. The country joins Hwuy-le on the north, and it is about three days' journey to the kingdom of Little Wan on the south. Grapes and other fruits are produced. The kingdom of Tsing-tseuĕ on the west is 2,000 *le* distant.

Seaou Wan.‡

The capital of the kingdom of Seaou Wan is the city of Yu-ling, distant from Chang-gan, 7,210 *le*. The kingdom contains 150 families, comprising a population of 1,050 people, with 200 trained soldiers, a Guardian Marquis, and a Left and a Right Protector General. The seat of the Governor General lies to the north-west 2,558 *le*. The country joins that of Chŏ Keang on the east, lying out of the way of the high road.

Tsing-tseuĕ.§

The capital of the kingdom of Tsing-tseuĕ is the city of

* Heuen-chwang gives the distance from Tsow-mo to Na-fŏ-po as 1,000 *le*.

† Fewer notices are to be found of this kingdom than the preceding; yet as we gather from the distances, it lay on the high road to the west, and adjoining that of Shen-shen. It is mentioned in the "Shwuy king," as lying to the east of the kingdom of Yu-me, and south of the southern confluent of the Tarim river. Fa-heen does not notice the place in his narrative; but Heuen-chwang speaks of the kingdom of Tsow-mo, as the last through which he passed before reaching Na-fŏ-po, on his homeward journey. This, which he says is identical with Neĕ-muh, is without doubt the same. He also calls the country, as well as the capital city Che-mo-ta-na; which appears to be still the old name modified to accommodate the language of the natives. He says:—"The city walls are very high, but there are now no inhabitants."

‡ *Seaou Wan* means "Little Wan;" probably so called to distinguish it from Fergana, which is called *Ta Wan*, or "Great Wan."

§ According to the "Shwuy king" this lay on the south bank of the southern

Tsing-tseuĕ, distant from Chan-gan 8,820 *le*. The kingdom contains 480 families, comprising 3,360 persons, with 500 trained troops, a Protector General of Tsing-tseuĕ, a Right and a Left General, and an Interpreter-in-chief. The seat of the Governor General lies to the north 2,723 *le*. The Kingdom of Jung-leu lies four days' journey to the south, through a country abounding in narrow passes. Yu-me lies to the west, 460 *le* distant.

*Jung-leu.**

The capital of the kingdom of Jung-leu is the city of Pe-pin, distant from Chang-gan 8,300 *le*. The kingdom contains 240 families, comprising 1,610 persons, with 300 trained troops. The seat of the Governor General lies to the north-east 2,850 *le*. The country joins Little Wan on the east, Chŏ Keang on the south, and Keu-lĭh on the west. It lies off the high road from China.

Yu-me.†

The capital of the kingdom of Yu-me is the city of Yu-me, distant from Chang-gan 9,280 *le*. The kingdom has 3,340 families, comprising a population of 20,040 persons, with 3,540 trained troops, a Guardian Marquis, a Right and a Left General, a Right and a Left Protector General, a Right and a Left Knight, and two Interpreters-in-chief. The seat of the Governor General lies to the north-east 3,553 *le* distant. The country joins Keu-lĭh on the south, Kwei-tsze on the north-east, and Koo-mĭh on the north-west. Khotan lies 390 *le* to the west. The present name of the country is Ning-me.

Keu-lĭh‡.

The capital of the kingdom of Keu-lĭh is the city of Keen-too, distant from Chang-gan 9,950 *le*. The kingdom contains 310 families, comprising 2,170 persons, with 300 trained soldiers. The seat of the Governor General lies to the north east 3,852 *le*. The country joins Jung-leu on the east, Chŏ Keang on the west, and Yu-me on the north.

great confluent of the Tarim. The distances given in our text from Chang-gan and the residence of the Governor General, place the site of the city somewhere about the location of Khotan as given in our maps.

* The text indicates this to be a tribe lying on the north-western outskirts of the territory now forming the Kingdom of Tibet.

† The *Shwuy king* places this country on the south bank of the northern confluent of the Tarim; which agrees with the indications in the text. All point to a spot nearly coincident with the present Yarkand.

‡ From the indications in the text, this appears to correspond with the site of modern Sandzu.

*Yu-teen (Khotan)**

The capital of the kingdom of Khotan is West City, distant from Chang-gan 9,670 *le*.

The kingdom contains 3,300 families, comprising a population of 19,300 persons, with 2,400 trained troops, a Guardian Marquis, a Right and a Left General, a Right and a left Knight, an East City Chief, a West City Chief, and an Interpreter-in-chief. The seat of the Governor General lies to the north-east, distant 3,947 *le*. The country joins Chŏ Keang on the south, and Koo-mih on the north. The waters on the west of Khotan all flow westward into the Western (Caspian?) Sea. The waters on the east all flow eastward into the Salt Marsh (Lake Lob), from which springs the source of the Yellow river. The country produces abundance of jade and other stones.† Pe-shan lies 380 *le* to the west.

Pe-shan.‡

The capital of the kingdom of Pe-shan is the city of Pe-shan,

* There is no doubt about this name designating the well-known Khotan, but from the several indications here given, it is almost certain that the city spoken of as the capital lay far to the west of modern Khotan. The distance given from Chang-gan carries us to about the 78th degree of longitude, and renders it probable the city lay on an upper bend of one branch of the Yarkand river. This would be the "West city" of the text; from which we learn that there was also an East city, but at what distance we are not told. Both, we may suppose, were known by the name of Yu-teen. Some traditionary statements in Heuen-chwang's narrative are strongly suggestive of the elastic and shifting character of the boundaries of this kingdom. But perhaps the strongest presumption for the more westward site of Khotan is afforded by the statement that the country extended to the watershed of the Pamir; as we are told that the waters on the west all flowed westward, and those on the east flowed eastward. The "Shwuy king" tells us that after passing the kingdom of Yu-teen, the river flows eastward, passing in succession the kingdoms of Yu-me, Tsing-tseuĕ, and Tseay-mŭh. Fa-heen spent over three months in this city, in the beginning of the fifth century; but he gives scarcely any clue to the position. Heuen-chwang also passed through Khotan on his return journey, and gives the distance from *Cho-keu-kea*, the ancient Yarkand, as 800 *le*, which seems to agree tolerably well with the present position of the city. Marco Polo, who passed the same road, says:—"Cotan is a province lying between north-east and east, and is eight days journey in length." (*See* "Mémoires sur les Contrées Occidentales," tom. ii, pp. 223-224.—"Record of the Buddhistic Kingdoms," pp. 5, 9.—"Marco Polo," vol. i, p. 196.)

† Heuen-chwang says:—"From this country are got woollen carpets, fine felts, well-woven taffetas, white and black jade." As jade is traditionally spoken of in China as the production of Khotan, it is remarkable that Marco Polo says nothing about it. Neither does Mr. Johnson, who visited the place in 1865. ("Rec. of the Bud. Kingd." p. 5.—"Mém. sur les Cont. Occid." tom. ii, p. 427, etc.—Yule's "Marco Polo," 2nd edition, vol. i, pp. 196, 197.)

‡ The "Se yĭh t'ung wăn che" (book iii, fol. 25), a native polyglott geographical dictionary, gives Duwa, in the province of Yarkand, as on the site of the ancient Pe-shan. The "Shwuy king choo t'oo tseen kaou" (book i, fol. 3), places the site of Pe-shan south-east of Yarkand, and west of Khotan.

distant from Chang-gan 10,050 *le*. The kingdom contains 500 families, comprising 3,500 persons, with 500 trained troops, a Right and a Left General, a Right and a Left Protector General, a Knight and an Interpreter-in-chief. The seat of the Governor General lies to the north-east, at a distance of 4,292 *le*. The kingdom of Woo-ch'a lies to the south-west 1,340 *le*. The country joins T'een-tŭh (India) on the south, and is distant from Koo-mih on the north 1,450 *le*. The road to Ke-pin (Kophen) and Woo-yih-shan-le lies to the south-west. North-west to Sha-keu is 380 *le*.

*Woo-ch'a.**

The capital of the kingdom of Woo-ch'a is the city of Woo-ch'a, distant from Chang-gan 9,950 *le*. The kingdom contains 490 families, comprising 2,733 persons, with 740 trained troops. The seat of the Governor General lies north-east 4,892 *le*. The country joins Tsze-hŏ and P'oo-le on the north, and Nan-tow on the west. The hills are surrounded by cultivated fields, and white grass grows among the rocks. The dwelling-houses are built of stone; and the people join hands in drinking. They have small trained horses and asses, but no oxen. To the west is the Hindu Cush. The capital is distant from the Yang barrier 5,888 *le*, and from the seat of the Governor General 5,020 *le*. The Hindu Cush is a rocky mountain range. There are gorges and valleys with no connecting road, but having ropes and chains thrown across, by means of which the passage is effected.

Se-yay.†

The title of the King of Se-yay is King of Tsze-hŏ, and the capital is called Keen-kŏh, being distant from Chang-gan 10,250 *le*. The kingdom contains 350 families, comprising a population of 4,000; with 1,000 trained troops. The seat of the Governor General lies to the north-east, at a distance of 5,046 *le*. The country joins Pe-shan on the east, Woo-ch'a on the south-west, Sha-keu on the north, and P'oo-le on the west. The kingdoms of P'oo-le, E-nae, and Woo-luy all belong to the same ethnic class with Se-yay. The Se-yay differ from the Tartar nations; being rather connected by affinity with the Keang and

* The indications in the text would lead us to place this territory somewhere about Sarikol. It may possibly have been near the present Kurghan-i-Ujadbai.

† The "Se yih t'ung wăn che" (book iii, fol. 23) gives Yul-arik in the province of Yarkand, as the modern representative of ancient Se-yay. On Wyld's map there is a place named Yolarik on a confluent of the Yarkand river, in N. lat. 37° 26′, E. long. 77° 22′. The corresponding place on the Russian map is named Kargalik.

Te-hing. The people move hither and thither, according to the supply of water and pasturage for their flocks and herds. The land of Tsze-hŏ* produces jade and other precious stones.

P'oo-le.†

The capital of the kingdom of P'oo-le is the city‡ of P'oo-le, distant from Chang-gan 9,550 *le*. The kingdom contains 650 families, comprising a population of 5,000, with 2,000 trained troops. The seat of the Governor General lies north-east, distant 5,396 *le*. Sha-keu lies to the east, at a distance of 540 *le*. Soo-lĭh is 550 *le* to the north. The country joins Se-yay and Tsze-hŏ on the south. Woo-luy lies 540 *le* to the west. There is a Marquis and a Protector General. For field products they rely on Sha-keu. Their national customs are the same as Tsze-hŏ.

E-nae.§

The capital of the kingdom of E-nae is distant from Chang-gan 10,150 *le*. The kingdom contains 125 families, comprising 670 persons; with 350 troops. The seat of the Governor General lies north-east, at a distance of 2,730 *le*. Sha-keuis distant 540 *le*, and Woo-luy 540 *le*. Soo-lĭh is 650 *le* to the north. The country joins Tsze-hŏ on the south, and their customs are the same. The cereals are scarce, and they rely on Soo-lĭh and Sha-keu for agricultural produce.

Woo-luy.‖

The capital of the kingdom of Woo-luy is the city of Leu,

* There is great uncertainty about the position of this place. It was the first station Fa-heen stopped at after leaving Khotan, on his way to Ujjana, but the time he took—twenty five days—to reach it, throws a difficulty in the way, as it appears to have been just to the north of the Karakorum range. Otherwise we might suggest somewhere about Shahidula at the Sokhbulak Pass; a little to the south of which "Jade Quarries" are marked on Wyld's map. This may perhaps be included in the country. After a careful review of Fa-heen's narrative, Professor Wilson remarks regarding this part of the journey:—"It is impossible, therefore, not to suspect something wrong in the distances or the bearing, perhaps in both." ("Journal of the Royal Asiatic Society," 1838, p. 113.)

† The "Se yĭh t'ung wăn che" (book iii, fol. 27) gives Serlek in the province of Yarkand, as the modern representative of this place. The "Shwuy king choo t'oo shwŏ tseen kaou" (book i, fol. 3) tells us that the country lay between the modern Yengihissar and Yarkand. The Russian map has a place named Sajryk, a few miles south-west of Yengihissar.

‡ The text has *kwŏ* (kingdom) here, which is obviously a typographical error for *ching* (city).

§ According to the "Shwuy king choo t'oo shwo tseen kaou" (book i, fol. 3) the site of ancient E-nae should be on the southern border of Yengihissar, somewhere about N. lat. 39°, E. long. 76°.

‖ The "Se yĭh t'ung wăn che" (book iii, fol. 18) gives Aratchul as the present name of the ancient Woo-luy country. This name is found in the native atlas

distant from Chang-gan 9,950 *le*. The kingdom contains 1,000 families, comprising a population of 7,000 persons. The seat of the Governor General lies north-east at a distance of 2,463 *le*. P'oo-le lies 540 *le* to the south. The country joins Woo-ch'a on the south, Keuen-tŭh on the north, and on the west. The dress of the people resembles that of Woo-sun; and their customs are the same as Tsze-hŏ.

*Nan-tow.**

The capital of the kingdom of Nan-tow is distant from Chang-gan 10,150 *le*. The kingdom contains 5,000 families, comprising a population of 31,000 persons, with 8,000 trained troops. The seat of the Governor General lies to the north-west at a distance of 2,850 *le*. Woo-luy lies 340 *le* to the west. Ke-pin lies 330 *le* to the south-west. The country joins Chŏ Keang† on the south, Heu-seun on the north, and the Ta Yuĕ-she on the west. They cultivate the five cereals, grapes and other fruits.‡ The country produces silver, copper, and iron, and they make military weapons, the same as other nations. The kingdom is attached to Ke-pin.

Ke-pin (*Kophen*).§

The capital of the kingdom of Kophen is the city of Sun-

Hwang chaou chung wae yĭh tung yu t'oo, in about N. lat. 39°, E. long. 74°, on the western border of the Kashgar province; but no corresponding name appears on any accessible European map.

* The distances and positions here seem to lead us somewhere about the southern part of the country of Shignan, where the city of Ishkashim is located. This is spoken of by Heuen-chwang, who says of it:—"This kingdom is an ancient province of the kingdom of Tokharistan. It is about 1,000 *le* from east to west, and 300 *le* from north to south; the capital is 15 or 16 *le* in circumference. The productions of the soil and manners of the inhabitants are much like those of Momkan." Marco Polo also speaks of the town of Casem, at the distance of a three days' ride from Taican, and says:—"This town is at the head of a very great province, which is also called Casem. The people have a peculiar language." ("Mém. sur les Cont. Occid.," tom. ii, p. 196.—"Marco Polo," vol. i. p. 161.)

† It seems a little difficult to reconcile this statement with fact. Chŏ Keang represented Tibet—or at least the northern portion of it. We must, however, extend its boundaries as far west as Baltistan or Little Tibet, in order to give it a chance of meeting the country here spoken of.

‡ At the place above indicated Heuen-chwang tells us:—"The sowing of grain and the harvests take place at regular periods. There is a flourishing vegetation of plants and trees; and the flowers and fruits are in extraordinary abundance." ("Mém. sur les Cont. Occid.," tom. ii, p. 193.)

§ By general consent of investigators, this has been admitted to be the ancient kingdom of Kophen, a name closely connected with—if not derived from—the River Kophes, which is found in the Vedas under the form *Kubha*, and appears in the classical writers also as Khoes and Koaspes. This country was identical with Kabulistan of later times, the capital of which is represented by the modern Cabul, the capital of Afghanistan. Heuen-chwang appears to have taken

seen,* distant from Chang-gan 12,200 *le*. The kingdom is not under the control of the Governor General. The numbers of families, persons, and trained troops are very large, as it is a great kingdom. The seat of the Governor General lies north-west at a distance of 6,840 *le*. The kingdom of Woo-ch'a lies 2,250 *le* to the east. The kingdom of Nantow is nine days' journey to the north-east. The country joins the Ta Yuĕ-she on the north-west and Woo-yih-shan-le on the south-west. Formerly, when the Heung-noo subjugated the Ta Yuĕ-she,† the latter migrated to the west, and gained the dominion over the Ta-hea (Dahæ);‡ whereupon the king of the Sae (Sacæ) moved south and ruled over Kophen. The Sae were scattered, and at times formed several kingdoms.§ North-west of Soo-lĭh the Heu-seun, Keuen-tŭh, and consanguineous nations are all descendants of the ancient Sae. The land of Kophen is flat; and the climate mild and agreeable.‖ The country produces *medicago sativa*, various herbs, strange trees, sandal wood, *sophora japonica*, *rottlera japonica*, bamboo, and the varnish tree. They cultivate the five grains, grapes and other fruits.¶ They manure their gardens and fields. In the low and damp

this in his homeward journey, and describes it under the name of Urddhasthana, as 500 *le* from Ghazni. The old name of *Ke-pin* or Kophen, he preserves as that of the capital city *Hwo-pe-na*.—("Anc. Geog. of India," pp. 34, 37.—"Mém. sur les Cont. Occid.," tom. ii, p. 190.)

* It is difficult to identify this name. Possibly it may be a corrupt transcript of "Urddhasthana," the ancient name of Cabul; or it may be a distortion of the name "Ghazni."

† *See* "Journal of the Anthropological Institute," January, 1874, pp. 414, 415, 433.

‡ "The Scythian tribes who occupied the Caspian plain to the west of the Massagetæ, extending to the Oxus or even to the Jaxartes, in which case they must have blended with the Massagetæ, bore the general appellation of Dae." (Wilson's "Ariana Antiqua," pp. 140, 141.)

§ "In Ariana they passed the mountains, and proceeding southwards, occupied the tract below the great lake wherein the Helmond terminates, which took from them the name of Sacastané (land of the Saka or Scyths) a name still to be traced in the modern 'Seistan.' Further to the east, they effected a lodgment in Kabul, and another in the southern portion of the Indus valley, which for a time bore the name of 'Indo-Scythia.'" (Rawlinson's "Sixth Great Oriental Monarchy," pp. 117, 118.)

‖ "In the summer, the heat of Candahar is intense; the winter mild. In Cabul the summer is charming; but during the winter the cold is intense." ("Notes to accompany Mr Wyld's Maps of Central Asia and Afghanistan," p. 24.)

¶ According to the Chinese, the five grains are—hemp, millet, rice, wheat, and pulse. ("Chinese Reader's Manual," p. 316.) Mr Wyld says:—"There are, as in India, two harvests in Afghanistan: of these one is sowed in the autumn and reaped in the spring, the chief crops being wheat, barley, peas, and beans: in Western Afghanistan this is the most important. The autumn harvest on the contrary is the principal one in Eastern Cabul, the seed is sown in the spring, and gathered in the autumn; it consists of rice, a grain called bajra (*Holcus spicatus*) and Indian corn." Of Cabul he says:—"It is a most lovely landscape, the plain being refreshed with numerous streams brought from the Cabul river, and

ground they grow rice. In winter they eat raw vegetables. The people are ingenious in carving, ornamenting, engraving and inlaying; in building palaces and mansions; weaving nets, ornamental perforation and embroidery; and excel at cooking. They have gold, silver, copper and tin,* of which they make vessels, and expose them for sale. They have a gold and a silver currency.† On the obverse of their money is a man on horseback, and on the reverse a man's face.‡ The country produces the Indian ox, the buffalo, the elephant, great dogs, large apes, and the pea-fowl; also pearls of different kinds, coral, amber, rock crystal, vitreous ware, camels, and domestic animals the same as other nations.§

From the time that the Emperor Woo-te opened up communication with Ke-pin, the rulers of that kingdom, in view of the extreme distance, had considered themselves safe from the intrusion of a Chinese army. In this confidence the King Woo-t'ow-

covered with green fields, fringed by rows of poplars and willow trees; orchards and vineyards filled with fruit trees of every description; and gardens well laid out and stocked with flowers and useful vegetables. Large quantities of grapes and dried fruits are exported to all parts of Northern India." (*l.c.* pp. 28, 18.)

* "Iron exists in the Vaziris Hills, and in Furmuli; copper in the Asmai Koh to the West of Cabul; lead in the Hazara Mountains, at Ko-i-wardak near Ghuznee, and in Argandab; antimony at Shah Mahsud, north of Candahar; sulphur, near Herat and Seistan; zinc in the Zhobe valley; and nitre all over the country. Gold, too, is found in the river beds, and affords a precarious existence to the few hundreds who search for it." ("Notes to accompany Mr. Wyld's Maps," &c., p. 27.)

† We do not find any specimens of a gold coinage among the Sacæ rulers of Kabulistan; but *silver* coins are by no means rare. Seven or more specimens of *gold* coins are known of Kadphisis who is supposed to have reigned in B.C. 1, while a solitary *silver* coin of this monarch is the only known silver specimen of the Indo-Scythian dynasty.

‡ This description applies only to one reign, on the coins of which there is no name, but only the title of the monarch, thus ΣΩΤΗΡ ΜΕΓΑΣ ΒΑΣΙΛΕΥΣ ΒΑΣΙΛΕΩΝ—"Great King of Kings the Preserver." Wilson, who supposes them to have been issued in the first century of the Christian era, gives the figures of sixteen specimens, and remarks:—"There is no great variety in these coins, although they are infinitely numerous, and are, with very few exceptions, of copper, and these latter are found, to use Mr. Prinsep's expression, 'by bagfuls' at Beghram, in many of the topes in the Panjab, and even in Central India. . . . . The type on one face is universally the mounted monarch, as on the coins of the preceding princes. On the other we have in a few instances the figure of a man in a long robe, apparently a priest, with a fire altar; but the device on those coins that are so numerous is the head of the king, occasionally, though rarely, with a helmet, but in general with either a kind of turban, or his hair dressed in a peculiar manner." No doubt the Han author had these in view when he wrote his account of Ke-pin, and his description is sufficiently accurate; but the pretended figures of foreign coins, found in Chinese numismatical treatises, are worthless caricatures, mere productions of the imagination of some Chinese, to illustrate the descriptions given in the dynastic histories. (*See* "Ariana Antiqua," p. 332.)

§ "The horse, camel, cow, buffalo, sheep, goat, mules, and asses are the principal animals of the country." ("Notes to accompany Mr. Wyld's Maps," etc., p. 27.)

laou* on several occasions put the Chinese envoys to death. On the death of Woo-t'ow-laou, his son, who succeeded to the dignity, sent an envoy with offerings to China; when Wăn Chung, the Protector General at the barrier, was sent to escort him home. The King again wished to take Wăn Chung's life; but the latter becoming aware of his intention, entered into a plot with the King of Yung-keu's son, Yin-mŭh-foo, which resulted in an attack on the country, when the King was killed, and Yin-mŭh-foo installed as King of Ke-pin, and received the seal and ribbon of investiture from China.

Afterwards the Military Marquis Chaou Tĭh, who was sent to Ke-pin, managed to get on bad terms with Yin-mŭh-foo, when the latter put the felon's collar on the envoy, killed his assistant and attendants, more than seventy persons in all, and then sent an envoy with a letter to the Emperor, acknowledging his transgression. But the country being among the unregistered and impracticable regions, the Emperor Yuen-te discharged the envoy; communication being cut off by the Hindu Cush.

In the time of the Emperor Ching-te (B.C. 32-7) Ke-pin again sent an envoy with offerings and an acknowledgment of guilt. The supreme board wished to send an envoy with a reply, to escort the Ke-pin envoy home; but Too Kin addressed the Generalissimo Wang Fung to the following effect:—"Formerly Yin-mŭh-foo, the King of Ke-pin, who was instated by China, ended by perversely rejecting our authority. Now there is no greater manifestation of virtue than for a ruler of a kingdom to treat the people as his children; and there is no greater sin than to detain and murder an envoy. Hence although omitting to requite favours they have no fear of chastisement; for they know that they are at such an extreme distance that our troops cannot reach them. When they have anything to ask, they come with humble expressions; but when they do not want anything, they are proud and insulting. They cannot by any means be brought to cherish the feeling of submission. Whenever China enters into liberal correspondence with the barbarian tribes, and we are pleased to

* The coins of Spalyrius, the Saca King of Kophen, bear the inscription ΣΠΑΛΥΡΙΟΣ ΔΙΚΑΙΟΥ ΑΔΕΛΦΟΥ ΤΟΥ ΒΑΣΙΛΕΩΣ *Spalurios Dikaiou Adelphou tou Basileōs*. He is here stated on the coin to be "brother" to the king, but Wilson thinks "it is not impossible that the 'brother' was the king *de facto*, although he left for a season the title to Palirisus." As we do not find a name among the Sacæ princes of Kophen in any way resembling *Woo-t'ow-laou*, it seems probable that the Chinese may have received the Greek designation *Adelphos* as the name of this prince. Truly the Chinese transcript is a nearer phonetic approach than the Arianian *Alabaraputosa* found on the same coins, and which Wilson says, "looks as if it was a blundering attempt to represent the Greek term ΑΔΕΛΦΟΣ." The date given is B.C. 75, which would apparently synchronize with the Chinese narrative. (*See* "Ariana Antiqua," pp 315, 316.)

attend to their requests, we receive their approaches with intimacy, and they act as brigands. Now the dangerous passes of the Hindu Cush cannot be traversed by the people of Ke-pin. A cringing attitude is no evidence of the pacification of the Western regions; and although they are not annexed to the empire, yet they are not a source of danger to the cities and suburbs. Formerly those we held intimate relationship with repudiated the token of authority, and spread vice and anarchy through the Western regions; so that intercourse was found to be impracticable. Now they come professing penitence, and do not enter into an intimate relationship. Their dignitaries who present offerings are all mean men carrying on commerce. They wish to open up commercial relations for the sake of the trade; and the offerings are a mere pretence. Therefore if we take the trouble to send an envoy to escort them to the Hindu Cush, I fear we shall commit an error, and find ourselves deceived. Whenever an envoy is sent to escort a guest, precautions must be taken to protect him against the attacks of brigands.

"From Pe-shan southward there are four or five kingdoms not attached to China. With only a hundred men to keep a look-out, and to beat the five night watches for self-protection, they will be at times exposed to attacks from robbers, carrying off their asses and cattle bearing provisions: and will thus be rendered dependent on these countries for food, for which they must make some requital. The countries may be small and poor, and unable to furnish food; or the inhabitants may be cruel and crafty and refuse to give, even intercepting them at the boundary. The Chinese Commission will in such circumstances be left to starve among the hills and valleys, begging food to sustain life, with no means of obtaining it. In some ten or twenty days men and animals will die in the desert, and be never more heard of. Again, on passing the Great Headache Mountain, the Little Headache Mountain, the Red Land, and the Fever Slope, men's bodies become feverish, they lose colour, and are attacked with headache and vomiting; the asses and cattle being all in like condition. Moreover there are three pools with rocky banks along which the pathway is only 16 or 17 inches wide for a length of some 30 *le*, over an abyss of frightful depth where the travellers whether on horse or afoot are all attached, and lead each other by ropes. After more than 2,000 *le* the Hindu Cush is reached; more than half the cattle having perished by falling down the chasms, their bodies lying scattered about and dashed to pieces. Men lose their grasp, and they are unable to save each other. In fact, viewing the dangers of these precipitous gorges, the difficulties

are beyond description. The sage kings divided the empire into nine departments and instituted regulations for the five tenures. Applying themselves to secure prosperity in the interior, they sought nothing from abroad. Now in sending an envoy to carry out the supreme commission by escorting the barbarian traders, you weary out the host of officials in passing through a dangerous and difficult road; thus suspending and degrading the trustworthy in the performance of a useless service. This is not a far-sighted policy. The envoy having already received his credentials, let him proceed as far as Pe-shan and then return." To this Wang Fung replied:—"According to your words, it is certainly profitable to Ke-pin if we grant them a market for their commerce; while they only send an envoy once in several years."

*Woo-yĭh-shan-le.**

The capital of the kingdom of Woo-yĭh-shan-le† is distant from Chang-gan 12,200 *le*. The State is not under the control of the Governor General. The numbers of families, of the population, and of trained troops are all those of a great kingdom. The seat of the Governor General lies north-east at a distance of sixty days' journey. The country joins Ke-pin on the east, Po-taou (Bactria) on the north, and Le-keen‡ and Teaou-che§ on the west. After a journey of about a hundred days, the kingdom of Teaou-che is reached, bordering on the Western Sea.‖ The climate there is hot and damp, and rice is cultivated. There are large birds, with eggs in size like a pitcher. The people are very numerous and are often under petty chieftains, subject to the Parthians, who consider foreigners clever at jugglery. There is a tradition among the Parthian elders about the Dead water,¶ and the Mother of the

* The positions laid down for this kingdom clearly point to Aria of the ancients, represented by the modern Khorassan.

† This is very suggestive of the word "Alexandria," the name of a city which had been repaired by Alexander the Great. The indications of the classical authors lead to the belief that it stood on the site of modern Herat and may have been the capital of the country about the beginning of the Christian era. (*See* "Ariana Antiqua," pp. 151, 152.)

‡ This appears to be the kingdom of the Seleucidæ, represented by Syria.

§ The country of the Tajiks, or ancient Persians.

‖ This passage involves some difficulty. Teaou-che is generally admitted to represent the Tajiks or ancient Persians; but a hundred days' journey west from Herat carries one far beyond the limits of Persia. The most satisfactory conclusion—as Dr. Bretschneider has shown—is, that Syria is the country here alluded to; and the description generally agrees with this identification. The Western Sea in this case would be the Mediterranean. (*See* "Notes and Queries on China and Japan," vol. iv, pp. 58, 59.)

¶ Probably the "Dead Sea."

Western kings* in Teaou-che, but they have never been seen. They say that from Teaou-che, a sea voyage of about a hundred days westward brings one near the place where the sun sets. The burning heat of the country of Woo-yĭh is exceptionally fierce. They have herbs and trees, domestic animals, the five kinds of grain, fruits, vegetables, food and drink, palaces and dwelling-houses, bazaars, circulating medium, military weapons, gold, pearls, and such like, all the same as in Ke-pin. They have also excellent peaches. The lion and the buffalo are found there, and by custom it is deemed laudable to kill these without mercy. On the obverse of their money there is only a man's head, and on the reverse is a figure of a man on horseback. They ornament their staves with gold and silver. Being extremely distant from China, an envoy rarely arrives. From the Yuh Gate and the Yang barrier, the southern road passing Shen-shen, tends southerly to Woo-yĭh-shan-le, which is the terminus of the southern road. Thence proceeding north, Parthia lies on the east.

Gan-seĭh (Parthia.)†

The capital of the kingdom of Gan-seĭh is the city of Fan-tow, distant from Chang-gan 11,600 *le*. It is not under the control of the Governor General. The country joins K'ang-keu‡ on the north, Woo-yĭh-shan-le§ on the east, and Teaou-che‖ on the west. The soil, climate, productions, and customs of the people are the same as those of Woo-yĭh and Ke-pin. They also have a silver coinage, with the king's head on the obverse, and a woman's head on the reverse.¶ When the king dies, they immediately cast new coins. The country produces ostriches. They have several hundred cities great and small. It is a kingdom of the largest size, being several thousand *le*

* It is not improbable that we have here an allusion to Lot's wife; the tradition of whose calamitous fate would naturally linger in after ages among the Moabites and Ammonites, and their descendants.

† That Gan-seĭh designates the ancient kingdom of the Arsacidæ seems scarcely to admit of a doubt.

‡ Sogdiana.

§ Khorassan.

‖ Persia.

¶ This somewhat singular fact is remarkably corroborated in the case of the Parthian monarch, Phraataces, who came to the throne B.C. 2. Engravings of two of his coins are given in the "International Numismata Orientalia;" and Professor Rawlinson gives a wood-cut of one with the following remarks:—"The coins of Phraataces have on one side his head; which is being crowned by two Victories; on the other the head of Musa [his mother], with the legend ΜΟΥΣΗΣ ΒΑΣΙΛΙΣΣΗΣ ΘΕΑΣ ΟΥΡΑΝΙΑΣ." Referring to the fact of this king having placed the effigy of Musa on the coins, Rawlinson observes:—"It is perhaps doubtful whether Phraates IV. [predecessor of Phraateces] had not done the same in his latter years as Mionnet and Mr. Lindsay imagine." ("The Sixth Great Oriental Monarchy," p. 220.)

square.* As the country extends to the Wei (Oxus) river their traders traverse the adjoining kingdoms† both by land and water. They write on skins in horizontal lines, in which manner they keep their records.‡

When the Emperor Woo-te first sent an envoy to Gan-seĭh, the King commanded a general to take 20,000 cavalry to meet him at the eastern border. The eastern border is several thousand *le* distant from the metropolis. Proceeding northward, they passed several tens of cities on the way, all the people of which were allied to each other. On this occasion the King sent an envoy to follow the Han envoy home to China. He took with him ostrich eggs and Le-keen jugglers, which he presented as offerings, and with which the Emperor was greatly delighted. To the east of Gan-seĭh is the country of the Ta Yuĕ-she.

Ta Yue-she (*Massagetæ*).

The capital of the kingdom of the Ta Yuĕ-she is the city of Keen-she, distant from Chang-gan 11,600 *le*. It is not under the control of the Governor General. The kingdom contains 100,000 families, comprising a population of 400,000, with 100,000 trained troops. The seat of the Governor General lies to the east, at a distance of 4,740 *le*. To Parthia on the west is a distance of forty-nine days' journey. The country joins Ke-pin on the south. The soil, the climate, the productions, the customs of the people, and the currency, are all the same as those of Gan-seĭh. They have the single-humped camel (dromedary). The Ta Yuĕ-she are a wandering nation,

* Professor Rawlinson gives the dimensions of Parthia proper as "from east to west a distance of 320, and from north to south of nearly 200 miles." This would amount to about 1,920 by 1,200 *le*. (*See* "The Sixth Great Oriental Monarchy," p. 1.)

† "There was a considerable trade between Parthia and Rome, carried on by means of a class of merchants." If they traded with Rome, it can scarcely be doubted that the commerce extended also to the Transoxianian nations. (*See* "Sixth Great Oriental Monarchy," p. 425.)

‡ "Though the Parthians had, so far as we can tell, no native literature, yet writing was familiar to them, and was widely used in matters of business. Not only were negotiations carried on with foreign Powers by means of despatches, but the affairs of the empire generally were conducted by writing. A custom-house system was established along the frontier, and all commodities liable to duty that entered the country were registered in a book at the time of entry, by the custom-house officer. In the great cities, where the Court passed a portion of the year, account was kept of the arrival of strangers, whose names and descriptions were placed upon record by the keepers of the gates. The orders of the Crown were signified in writing to the satraps; and they doubtless corresponded with the Court in the same way. In the earlier times the writing material commonly used was linen; but shortly before the time of Pliny, the Parthians began to make paper from papyrus, which grew in the neighbourhood of Babylon, though they still employed in preference the old material." ("Sixth Great Oriental Monarchy," pp. 424, 425.)

moving from place to place for the convenience of their flocks and herds, the same as the Heung-noo.* They have more than a hundred thousand men skilled in the use of the bow;† and in former times considered themselves strong enough to treat the Heung-noo with contempt. Originally they lived between Tun-hwang and Ke-leen, when Maou-tun Shen-yu‡ attacked and subdued them. Laou-shang Shen-yu§ killed the King of the Yuĕ-she, and converted his skull into a drinking-bowl. The tribe then removed to a distance, passed Ta-wan, and attacked the Ta-hea on the west, reduced them to vassalage, and established their metropolis on the north of the Wei (Oxus) river, where the King held his Court. A small section, who were unable to leave, fortified themselves at the southern mountains, and were named by the Keang the Seaou Yuĕ-she. The Ta-hea were originally without a Chief Paramount; and were accustomed to set up petty chiefs over their cities. But the people were weak and afraid to engage in war. Hence when the Yuĕ-she removed into their country they all became their vassals, and they presented a united petition to the Chinese envoy. They have five Heĭh-hows. One is called the Heĭh-how of Heu-mieh; his capital being the city of Ho-mih, distant from the Governor General 2,841 *le*, and from the Yang barrier 7,802 *le*. The second is the Heĭh-how of Chwang-me; his capital being the city of Chwang-me, distant from the Governor General 3,741 *le*, and from the Yang barrier 7,782 *le*. The third is the Heĭh-how of Kwei-seang; his capital being the city of Hwo-tsaou, distant from the Governor General 5,940 *le*, and from the Yang barrier 7,982 *le*. The fourth is the Heĭh-how of Heĭh-tun; his capital being the city of Po-maou, distant from the Governor General 5,962 *le*, and from the Yang barrier 8,202 *le*. The fifth is the Heĭh-how of Kaou-foo; his capital being the city of Kaou-foo, distant from the Governor General 6,041 *le*, and from the Yang barrier 9,283 *le*. These five Heĭh-hows are all dependents of the Ta Yuĕ-she.

K'ang-keu (*Sogdiana*).‖

The King of K'ang-keu likes to hold his Court during winter

* Wilson, speaking of the Massagetæ, says:—"The character of the countries which they occupied seems to have been in all ages essentially the same—extensive steppes and plains of sand, interspersed at intervals only with water and verdure, and compelling the inhabitants to lead a migratory life, in quest of pasture for the cattle on which they themselves chiefly subsist." ("Ariana Antiqua," p. 138.)

† "They were good riders and excellent archers." ("Sixth Great Oriental Monarchy," p. 119.)

‡ He ruled from B.C. 209 to 174.

§ From B.C. 173 to 160.

‖ The identification of K'ang-keu with Sogdiana has been generally accepted.

in the country of Yuĕ-nieh at the city of Pe-teen, which is distant from Chang-gan 12,300 *le*. The kingdom is not under the control of the Governor General. From the country of Yuĕ-nieh to the king's summer residence inside the border is a distance of seven days' journey on horseback. Thence to Chang-gan is 9,104 *le*. The kingdom contains 120,000 families, comprising a population of 600,000, with 120,000 trained troops. The seat of the Governor General lies to the east 5,550 *le*. Their customs are the same as those of the Ta Yuĕ-she. On the east they paid a forced servitude to the Heung-noo.

In the time of the Emperor Seuen-te (B.C. 73–49), when the Heung-noo were in a state of anarchy, and five Shen-yu were all fighting against each other, China interposed its influence to set up Hoo-han-seay Shen-yu; and Che-che Shen-yu being incensed against the Chinese, put their envoy to death; and then moving westward (B.C. 49) settled in K'ang-keu.

After this the Governor General Kan Yen-show and the Assistant Deputy Protector Ch'in Tang brought the Woo-ke Deputy Protector with the troops of the various kingdoms of the Western regions to K'ang-keu and exterminated the power of Che-che Shen-yu; the details regarding which may be found in the Memoirs of Kan Yen-show,* and Ch'in Tang.† This took place in the year B.C. 36.

In the time of the Emperor Ch'ing-te (B.C. 32–7), the Prince

Bretschneider remarks:—"It seems however, that the country of *K'ang kŭ*—first mentioned in the 'History of the Anterior Han'—before our era, included Sogdiana; for in the 'History of the Northern Wei (386–558),' a country in the west, *K'ang*, is described, and it is further stated there that the people of K'ang are a branch of the *Kang-kŭ* of the Han period. In the 'History of the T'ang,' chap. cclviii, *b*, the kingdom of *K'ang* is again spoken of; and among the synonyms given for the same country we find *Sa-mo-kien*, which is intended for Samarcand." ("Notices of the Mediæval Geography and History of Central and Western Asia," p. 163.)

* The biographical notice of this officer is summed up briefly as follows:—"Kan Yen-show, who bore the cognomen Keun-hwang, was a native of the district of Yuh-che (now Gan-hwa) in the prefecture of Pĭh-t'e (now K'ing-yang in the province of Kansuh). Being a scion of a good family he excelled in horsemanship and archery in his youth, and was made a member of the Imperial body-guard. In such athletic exercises as throwing the stone he far outstripped his compeers; and upon one occasion he leaped over the two-story guard-house. Consequent on this feat he was appointed fugleman at the military competitive examinations. By his talents, strength, and amiability he gradually rose in the service, till he became Governor of Leaou-tung. Instead of availing himself then of his official carriage, he travelled on horseback like a general, and was exemplary in his patronage. In time Kan Yen-show was made Secretary and Grand Adviser, and was appointed Governor-General of the Western regions and Cavalry Protector General; when, in concert with the Assistant Deputy Protector, he killed and beheaded Che-che Shen-yu, and was promoted Marquis of E-ching. After his death he was designated the Robust Marquis. The viceregal dignity descended to his great-grandson, till the defeat of Wang Mang, when the line was cut short." ("Tseen Han Shoo," book lxx, fol. 3, 4.)

† *See* Appendix A.

of K'ang-keu sent his son to China as a hostage, with an offering of tribute; but the country being at such an extreme distance, the Prince was only haughty and insolent, and refused to look up to China like the other nations. The Governor General Kwo Shun several times addressed the throne, saying:—"Originally when the Heung-noo attained their highest prosperity it was not on account of their connection with Woo-sun and K'ang-keu; and when they came calling themselves menials, it was not because they had lost these two kingdoms. Although China has received hostage princes from all these, yet the three kingdoms impose burdens on each other, and neglect intercourse with the empire as of old. They also keep watch, waiting a convenient time for demonstration. When near they cannot be taken into close confidence; when distant they cannot be made use of as vassals. Applying this to present circumstances, the connection with Woo-sun by marriage has never turned out of any advantage to us; but on the contrary has been a cause of trouble to China. However, Woo-sun having formerly formed this connection, and now both that nation and the Heung-noo style themselves vassals, it is not right that they should be repelled. But K'ang-keu is so proud and crafty that they will not pay due honour to our envoys. When the Governor General's official reached their country he was set below the envoys from Woo-sun and the other countries. When the King and his nobles have finished their repast, the Governor General's official is then allowed to swallow a morsel. Hence there is no room for boasting to the neighbouring kingdoms of these forming provinces of the empire. According to this estimate, why do they send their sons to Court as hostages? The reason is that they wish to deceive us by specious words in order to be allowed to trade. The Heung-noo and all the great barbarian kingdoms now render perfect service to China; but it is reported that K'ang-keu does not pay homage; and moreover that it has sent an envoy to the Shen-yu, as an act of self-humiliation. Their hostage prince ought to be sent back, and an envoy should never be sent to them again, in order to show that the house of Han does not hold intercourse with kingdoms which ignore the rules of etiquette. The small regions of Tun-hwang and Tsew-tseuen and the eight kingdoms on the southern road give food to the envoys passing to and fro, including men, horses, asses and camels; all which becomes very severe on them, exhausting their supplies of rice; but to meet and escort those of proud, crafty, and extremely distant nations, is by no means a wise policy. In opening up a fresh intercourse, China treats men from afar with the greatest liberality; but in the end has to curb and restrain them, yet she does not cast them off."

To the north-west of K'ang-keu, about 2,000 *le* distant, is the kingdom of Yen-tsae,* with more than 100,000 bowmen; having the same customs as K'ang-keu, on the border of a great marsh without banks, which is the Northern Sea (Caspian). K'ang-keu has five viceroys. One is called the viceroy of Soo-heae; his capital being the city of Soo-heae, distant from the Governor General 5,776 *le*, and from the Yang barrier 8,025 *le*. The second is called the viceroy of Foo-mĭh; his capital being the city of Foo-mĭh, distant from the Governor General 5,767 *le*, and from the Yang barrier 8,025 *le*. The third is called the viceroy of Yu-nieh; his capital being the city of Yu-nieh, distant from the Governor General 5,266 *le*, and from the Yang barrier 7,525 *le*. The fourth is the viceroy of Ke; his capital being the city of Ke, distant from the Governor General 6,296 *le*, and from the Yang barrier 8,555 *le*. The fifth is called the viceroy of Gaou-këen; his capital being the city of Gaou-këen, distant from the Governor General 6,906 *le*, and from the Yang barrier 8,355 *le*. All these five are viceroys of K'ang-keu.

Ta-wan (*Fergana*).†

The capital of the kingdom of Ta-wan is the city of Kwei-shan,‡ distant from Chang-gan 12,550 *le*. The kingdom contains 60,000 families, comprising a population of 300,000, with 60,000 trained troops, a Viceroy, and a National Assistant Prince. The seat of the Governor General lies to the east at a distance of 4,031 *le*. To the city of Pe-teen in K'ang-keu on the north is 1,510 *le*. To the Ta Yuĕ-she on the south-west is 690 *le*. The country joins K'ang-keu on the north, and the Ta Yuĕ-she on the south.§ The soil, climate, productions, and customs of the people are the same as those of the Ta Yuĕ-she and Ganseĭh. Round about Ta-wan they make wine from grapes. Wealthy people store up as much as 10,000 stone and over in their cellars, and keep it for several tens of years without spoiling. The people are fond of wine, and the horses are fond of *medicago sativa*. There are more than seventy other cities in the country. There is a numerous breed of excellent horses which perspire blood. It is said that this breed is from the strain of a supernatural stallion. When Chang Këen first told the Emperor about them, the monarch sent an envoy with a thousand pieces of gold and a golden horse, in order to obtain some of these excellent horses. But the King of Ta-wan, con-

* The Asi.

† This corresponds to the present Khanate of Khokand.

‡ The most ancient capital of Fergana recorded by Mohammedan writers is Akhsi. Possibly Kwei-shan may be a mutation of the same name.

§ The "She ke" says "west."

sidering that on account of its extreme distance China could not send an army there, and in view of the great value he attached to these precious horses, refused to part with them to China. The envoy having been betrayed into the use of some unguarded expressions regarding Ta-wan, the King had him put to death, and took possession of his treasure. The Emperor thereupon sent the Urh-sze* General Le Kwang-le in command of an army numbering over 100,000 from first to last, which attacked Ta-wan for four successive years, till at last the natives beheaded the King Wuh-kwa, and presented an offering of 3,000† horses. The Chinese army then returned. The details of these transactions are found in the "Memoir of Chang Këĕn."‡ The Urh-sze general having secured the decapitation of the King, set up a noble of the country, who had previously received benefits from China—by name Mei-tsae—in his place.

More than a year after this the nobles of Ta-wan charged Mei-tsae with having, by his sycophancy, caused the butchery of their compatriots, and uniting together, they put Mei-tsae to death, and set up Chen-fung, the younger brother of Wuh-kwa, as king, who sent his son to Court as a hostage. China consequently sent an envoy with gifts, to secure and pacify them. More than ten missions were subsequently sent to the various kingdoms west of Ta-wan, seeking for rarities; and the fame of the power of China, which had subdued Ta-wan, was thus spread far and near. Chen-fung, the King of Ta-wan, entered into a treaty with China, by which he agreed to send an offering of two celestial horses every year. The Chinese envoy selected and took back with him plants of the grape and *medicago sativa*. The Emperor now having a numerous stud of celestial horses, and the ambassadors flocking in numbers from foreign countries, having also planted the grape and the *medicago sativa*, he left his palace and took up his residence in a separate house, to have a distant look-out upon his possessions. From Fergana westward to the kingdom of Parthia, although their language is somewhat different, yet the resemblance is so great that they can make themselves intelligible to each other. The people of Ta-wan have deep sunken eyes, and bushy beards and whiskers. They are clever traders,

* Urh-sze was the name of the city where the King of Fergana kept the famous horses. The name is strongly suggestive of Ush or Uzgend, a place on the high-road through Fergana. "The city is now in ruins, and from their extent it may be concluded that the ancient city was very large." (Bretschneider's "Notices of the Mediæval Geography and History of Central and Western Asia," p. 157.) On Wyld's Map of Central Asia, the name is written Osh.

† In the "Memoir of Ch'in Tang," the number of horses presented on this occasion is said to be thirty. Three thousand is probably a misprint.

‡ *See* Appendix B.

and dispute about the division of a farthing. Women are honourably treated among them, and their husbands are guided by them in their decisions. Silk and varnish are used all over the country. They did not understand casting iron implements till a Chinese envoy, having lost his troops, submitted to them, and taught them the art of casting, when they made new military weapons. They applied the Chinese gold and silver to make vessels, instead of using them for state presents. From Woo-sun westward to Gan-seĭh, the several kingdoms are all near the country of the Heung-noo. The Heung-noo having oppressed the Yuĕ-she, when the Heung-noo envoy came to Ta-wan with a letter from the Shen-yu, he was entertained and forwarded, as they dared not detain and punish him. But when the Chinese envoy arrived, he could not obtain food, nor purchase cattle, nor secure the accommodation necessary for his horses till he had delivered his presents. The reason of this was that China was so far distant, and possessed so much wealth, that the people of Ta-wan would only give them what they wanted on fair commercial considerations. After Hoo-han-seay Shen-yu paid court to China, then China was honoured by all the kingdoms.

*Taou-hwae.**

The capital of the kingdom of Taou-hwae is distant from Chang-gan 11,080 *le*. The kingdom contains 700 families, comprising a population of 5,000, with a thousand trained troops.

Heu-tun.†

The capital of the kingdom of Heu-tun is in the Meaou-fei valley, on the west of the Tsung-ling mountains, distant from Chang-gan 10,210 *le*. The kingdom contains 358 families, comprising a population of 1,030, with 480 trained troops. The seat of the Governor General lies to the east, at a distance of 3,121 *le*. To the valley of Yen-tun in Keuen-tŭh in the same direction is 260 *le*. To the kingdom of Ta-wan on the north-west is 920 *le*. To the Ta Yuĕ-she on the west is 1,610 *le*. The customs of the people and their clothing are of a class with those of Woo-sun. They move about for the convenience of

* From the very scanty indications given, it is impossible to identify this locality. The distance from China would lead us to believe that it must be somewhere eastward of and not far distant from Fergana. The name is somewhat suggestive of the ancient Tochari. Is it possible that a section of that people may have localised the name to this small territory?

† No clue presents itself to the identification of this small territory, which lay apparently at the western extremity of the Kashgar basin.

their flocks and herds, according to the supply of pasture and water. They are originally one of the old Sae tribes.

*Keuen-tŭh.**

The capital of the kingdom of Keuen-tŭh is in the valley of Yen-tun, distant from Chang-gan 9,860 *le*. The kingdom contains 380 families, comprising a population of 1,100, with 500 trained troops. The seat of the Governor General lies to the east 2,861 *le*. Soo-lĭh also lies to the east. To the south is the uninhabited region of the Tsung-ling mountains. Ascending the Tsung-ling mountains on the west is Heu-tun. North-west to Ta-wan is 1,030 *le*. On the north the country joins Woo-sun. The dress of the people is of a class with those of Woo-sun. They move about the Tsung-ling mountains, where they can find water and pasture for their flocks and herds. They are originally one of the Sae tribes.

Sha-keu.†

The capital of the kingdom of Sha-keu is the city of Sha-keu, distant from Chang-gan 9,950 *le*. The kingdom contains 2,339 families, comprising a population of 16,373, with 3,049 trained troops, a National Assistant Marquis, a Left General, a Right General, a Left Knight, a Right Knight, an Anticipater of Se-yay raids, two Protectors General, and four Interpreters-in-chief.

The seat of the Governor General lies to the north-east at a distance of 4,746 *le*. Soo-lĭh is 560 *le* to the west.‡ P'oo-le is 740 *le* to the south-west.§ There is a mountain of iron in the country which produces blue jade.

In the time of the Emperor Seuen-te (B.C. 73–49), the Imperial Princess‖ of Woo-sun had a little son named Wan-nëen, who was tenderly loved by the King of Sha-keu. The King of Sha-keu died without a son, Wan-nëen being in China at the time. The people of Sha-keu determined to submit the choice of a new king to China, and wishing at the same time to be on good terms with Woo-sun, they forwarded a letter to the Emperor, requesting to have Wan-nëen made King of Sha-keu.

* The indications in the text would lead us to look for this small territory to the west of Kashgar, on the high road to Uzgend, somewhere about the 74th degree of longitude.

† Chinese geographers of the present dynasty identify this with Yarkand.

‡ The account of Soo-lĭh makes Sha-keu lie to the south 560 *le*. Probably the truth is an average between the two.

§ The account of P'oo-le makes Sha-keu lie to the east 540 *le*. The present text seems the more probable.

‖ This was Keae-yew, the daughter of the King of Tsoo, who was sent by the Emperor in marriage to Keun-sew-me the Ch'in-tsow, and after his death was married to Ung-kwei-me, his cousin and successor.

The Emperor consented, and sent the envoy He Ch'ung-kwŏ, to escort Wan-nëen back. When the new sovereign first ascended the throne he was tyrannical and cruel, and alienated the people of the country. The old King of Sha-keu had a younger brother named Too-ching, who killed Wan-nëen and also the Chinese envoy, and set himself up as king, entering into a compact with the neighbouring kingdoms to turn against China. It happened at this time that Fung Fung-she, the Marquis of Wei, was sent to escort home an envoy from Ta-wan; and seized the occasion to call forth the troops of the several kingdoms, attacked and killed the King, and then set up the son of one of his brothers as King of Sha-keu. On his return Fung Fung-she was made a Great Statesman of the Banqueting-house. This occurred in the year B.C. 65.

*Soo-lĭh.**

The capital of the kingdom of Soo-lĭh is the city of Soo-lĭh, distant from Chang-gan 9,350 *le*. The kingdom contains 1,510 families, comprising a population of 8,647, with 2,000 trained troops, a Marquis of Soo-lĭh, a Heung-noo Attacking Marquis, a National Assistant Marquis, a Protector General, a Left General, a Right General, a Left Knight, a Right Knight, a Left Interpreter-in-chief, and a Right Interpreter-in-chief. The seat of the Governor General lies to the east at a distance of 2,210 *le*. Shakeu lies 560 *le* to the south. They have a market for goods. The road to the Ta Yuĕ-she, Ta-wan, and K'ang-keu lies direct west.

Yu-t'ow.†

The capital of the kingdom of Yu-t'ow is in the valley of Yu-t'ow, distant from Chang-gan 8,650 *le*. The kingdom contains 300 families, comprising a population of 2,300, with 800 trained troops, a Left Protector General, a Right Protector General, a Left Knight and a Right Knight. The seat of the Governor General lies to the east 1,411 *le*. The country joins Soo-lĭh on the south; but the road being mountainous, renders intercourse difficult. Keuen-tŭh is 1,314 *le* to the west, two days' journey on horseback by a narrow path. They have cultivated fields, and rear domestic animals, moving about for convenience of water and pasturage. Their dress is in the same style as that of Woo-sun.

* This is satisfactorily identified as the ancient representative of the more modern Kashgar.

† This is said to be the ancient representative of modern Uch, lying to the north-east of Kashgar. On Wyld's Map of Central Asia the place is named Ush-turfan.

APPENDIX.

A. The following is the account of CH'IN TANG, alluded to, as contained in the "Tseen Han Shoo," Book lxx. fol. 4–14.

CH'IN TANG, who bore the cognomen Tsze-kung, was a native of the district of Hea-k'eu (now Tsze-yang) in the prefecture of Shan-yang (now Yen-chow in the province of Shantung). In youth he was fond of books, and became deeply read in the higher order of literature. Having come of a poor family, however, he was driven to shifts for a subsistence, and being extravagant in his habits he failed to gain the esteem of his neighbours. Being induced to leave home, he went west to Chang-gan, the metropolis, to seek employment, and there obtained a menial office in the service of one of the higher dignitaries. After several years' residence there his abilities brought him favourably to the notice of Chang Pŏ, the Marquis of Foo-ping.

In B.C. 47, when the various marquises were ordered by the Emperor to select men suitable for the public service, Ch'in Tang was selected by Chang Pŏ. While waiting for his appointment his father died; but he did not return home to attend the funeral rites. A censorial officer memorialised the throne that Ch'in Tang had failed to comply with the mourning regulations; and having been selected by Chang Pŏ, the latter was deemed unfaithful to his charge, and was mulcted in the revenue of two hundred families; and at his death he was canonised as the Erring marquis. Ch'in Tang was thrown into prison; but after a favourable consideration of his case he was again set at large. After repeated requests to be sent on foreign service, he was at length appointed Assistant Deputy Protector in the Western regions, and left for his post, together with Kan Yen show, the Governor General.

Previous to this, in the time of the Emperor Seuen-te, when the Heung-noo were in a state of anarchy, five Shen-yu being all striving together for the supremacy, China lent her patronage to Hoo-han-seay Shen-yu.

Both this chieftain and Che-che Shen-yu sent their sons to reside at the Chinese Court, where they were duly received. After this, Hoo-han-seay went in person to Court, and had an audience with the Emperor, at which he styled himself a vassal. Che-che, thinking Hoo-han-seay had been induced to tender his submission to China in consequence of his enfeebled state, in which case he would not venture to return to his own country, resolved to occupy the right-hand land on the west. But when China sent a formidable military escort to accompany Hoo-han-seay back, Che-che moved westward, subdued the Woo-kĕĕ, Keen-kwăn (ancestors of the Kirghiz), and Ting-ling nations, and fixed his capital in Keen-

kwăn. Irate at China for extending its protection to Hoo-han-seay, and not assisting himself, he treated the Chinese envoy Keang Nae-che and his suite with severity and insult.

In B.C. 45, Che-che sent an envoy with offerings, and availed himself of the occasion to request that his son might be excused attendance at Court, as he wished his service in the administration. When the Chinese were deliberating on sending the Guard Cavalry Leader Kŭh Keĭh to escort Che-che's son to his home, the Censor and Great Statesman Kung Yu, and the Professor K'wang Hăng said:—"From the *Ch'un ts'ew* history we know that if the empire is to acquiesce in the wishes of the barbarian races, concession cannot be limited to a single instance. Now Che-che is not drawing towards our civilizing influence from disinterested motives. His residence being so extremely distant, the envoy should be ordered to escort his son beyond the boundary and then return." At this point Kŭh Keĭh presented a memorial to the following effect:—"China professes to exercise an unlimited control over the barbarian races. Now having entertained the chief's son for ten years past, a deep and salutary impression has been produced. Is it wise to efface this impression by refusing to send an envoy? Should we merely escort him for a short distance to the boundary and return, like sending off a petty official whom we do not desire longer to entertain, we shall quite extinguish his attachment, and he will give no heed to the Imperial will. It is not prudent to abandon the advantage gained by previous favours, and provoke resentment in the future. The Imperial counsellors consider that there has been no retaliation for the treatment Keang Nae-che received at the hands of Che-che; but they should know that the severities to which our representatives were subjected will naturally produce shame on the part of the offender, which is a natural prelude to becoming a vassal, and when the vassal is oppressed with anxious cares we shall happily succeed in strengthening the authority of China. When exhibiting the illustrious and sacred decree, holding forth the most liberal favours, he will not dare to act a deceitful part. If we cherish birds and beasts, and treat a vassal with no regard to principle, then the Shen-yu—who has been culpable of a great crime—will certainly abscond and take up his residence in a still more remote region; nor will he dare to approach the frontier. Let one envoy be sacrificed to secure the peace of the people. Such is State policy, and such is your servant's desire. He wishes to escort the party to the Court of the Shen-yu." The Emperor laid this memorial before his Court for consideration. Kung Yu again contended that if Kŭh Keĭh went, the empire would certainly have cause to repent it, for it would give rise to troubles. He dissuaded compliance with the proposal. The Right General Ma Fung-she, however, supported the projected escort, and the Emperor gave his sanction. The embassy having been thus decided on, in due time the party reached Che-che's settlement; but the latter was in no mood to conciliate the Chinese, and giving vent to his wrath, he ultimately put to death Kŭh Keĭh and all his retinue.

Knowing that he had thus rendered himself obnoxious to China, and hearing that Hoo-han-seay was becoming more formidable, he fled to the west, and settled in K'ang-keu. There the king of the country gave his daughter in marriage to Che-che, while he in turn gave his daughter in marriage to the King of K'ang-keu. The K'ang-keu treated Che-che with great honour, wishing by means of his prestige to intimidate the other nations. On several occasions Che-che borrowed K'ang-keu troops to attack Woo-sun. He advanced a long way into that country, to the city of Chĭh-kŭh, slaughtering and carrying captive the people, and driving off their animals. The Woo-sun troops did not dare to pursue them to the western border, the country being waste and without inhabitants for 1,000 *le*. Che-che now began to assume for his domain the status of a great kingdom, being renowned for his dignity and loaded with honours; and being furthermore haughtily elated by his victories, he refused to render the rites due to the King of K'ang-keu. In the consequent misunderstanding, Che-che's anger rose to that extent that he put to death the daughter of the K'ang-keu king, some of his nobles, and several hundreds of the people, some of whom he dismembered, and threw their bodies into the Too-luy River. He then set the people to work to build a city, having 500 men at it daily for two years, till it was finished. He also sent envoys to chide Hŏ-soo (the Asi), Ta-wan (Fergana), and other countries into sending yearly offerings, which they did not dare to withhold. China sent three envoys to K'ang-keu for the dead bodies of Kŭh Keĭh and his followers; but they were oppressed and insulted by Che-che, who refused to receive the Imperial rescript, and through the Governor General forwarded a letter to the throne, saying:—"Wretched and miserable as I am, it is my desire to become attached to the empire, submitting to its plans, and I will send my son to reside at the Chinese Court." This was said in haughty raillery.

In B.C. 36, Ch'in Tang went to the Western regions with Kan Yen-show. Now Ch'in was a man of indomitable bravery, and was fertile in comprehensive designs, having an abundance of deep-laid stratagems at his command. He was, moreover, fond of adventure. On passing any city, town, hill, or river, he was accustomed to ascend some eminence to get a view of the position. When he had received his foreign commission, he took counsel with Kan Yen-show, saying:—"The Northern and Eastern barbarian races are naturally disposed to submit to the larger tribes. Originally the Western regions belonged to the Heung-noo. Now the fame of Che-che Shen-yu's dignity is spread far and wide. He insultingly threatens Woo-sun and Ta-wan, and is constantly scheming for their subjection to K'ang-keu. Should he get possession of these two kingdoms, attack E-leĭh on the north, take Gan-seĭh on the west, and push back the Yuĕ-she and Woo-yĭh-shan-le on the south, in a few years all the settled kingdoms will be in danger. His people are active, fearless, and fond of fighting; and having obtained several victories, if they are much longer tolerated they will certainly become the scourge of the Western regions. Although

Che-che lives at an extreme distance, yet the barbarian races have no impregnable cities or strongly defended fortresses. If we take the available troops from the military colonies, and urge on all the forces from Woo-sun straight up to his city, should he take to flight he will find no asylum to receive him; or should he stand on the defensive he will be unable to protect himself; and so by one morning's work we shall achieve a merit that will be remembered for a thousand years." Kan perfectly agreed with these suggestions, and wished to memorialise for permission to act on them. Ch'in however replied:—"When the Emperor holds a consultation with the dukes and high Ministers about any scheme of great importance, if it does not commend itself to the whole assembly, it will certainly not be carried out." Kan, however, still persisted in postponing action. It happened shortly after this that he was laid aside by a protracted sickness; when Ch'in took upon himself single-handed to call out the troops of the settled kingdoms, and the Wooke Deputy Protector of Keu-sze, with the trained contingents of the military colonies. When Kan heard of these proceedings he rose in excitement, and wished to put a stop to them. Ch'in then in wrath laid his hand on his sword, and said to Kan indignantly:—"The great body of the troops are already assembled. Menial! would you throw an obstacle in the way?" Kan eventually assented. The forces were gathered in brigades, and arranged in ranks as usual, with the additional companies of the Expanding Dignity, the White Tiger, and the United Cavalry, the Chinese and foreign troops together forming an army of over 40,000. Kan and Ch'in then memorialised the throne, inculpating themselves, and stating the particulars of the military enterprise, in which they had ventured to act on their own responsibility. The same day they called out the army, dividing the troops by ranks, and separating them into six companies. Three of the companies went by the southern road, across the Tsung-ling Mountains, following the path through Ta-wan. The three other companies, which were under the personal command of the Governor General, started from the kingdom of Wan-suh, advanced by the northern road to Chĭh-kŭh, crossed Woo-sun, and passed over the border of K'ang-keu, to the west of the Teen Lake. The assistant King of K'ang-keu, named Paou-teen, had made a raid at the head of several thousand horsemen on the country east of the city of Chĭh-kŭh, killing and taking captive more than a thousand of the Great Kwăn-me's subjects, and carrying off immense droves of cattle. Subsequently, coming up with the rear of the Chinese army, they made a serious plundering attack on the baggage train. Ch'in now giving the reins to his foreign troops, they killed 460 of the enemy, recovered 470 of the people that had been carried off, and delivered them back to the Great Kwăn-me; but used the horses, oxen, and sheep as food for the army. They also took one of Paou-teen's nobles named E-noo-tŭh, and advanced beyond the eastern border of K'ang-keu; but the troops were restrained from acts of brigandage. Ch'in then secretly sent for T'oo-mĭh, a noble of the country, and after a

solemn conversation they pledged their mutual fidelity by drinking together. T'oo-mih was then sent forward to lead the way for the army. When within about 60 *le* of the Shen-yu's city they pitched their camp, and caught two more K'ang-keu nobles, named Keu-sih-tsze and Nan-kae-mow, of whom they made use as guides. Keu-sih-tsze was T'oo-mih's maternal uncle, and both were aggrieved by the conduct of the Shen-yu, by which means Ch'in gained an intimate knowledge of the state of Che-che's affairs. The following day the army advanced, but when within 30 *le* of the city the camp was again pitched. The Shen-yu then sent a messenger to inquire what the Chinese troops had come for; to whom the following reply was committed:—"The Shen-yu formerly addressed a letter to the throne, saying: 'Wretched and miserable as I am, it is my desire to become attached to the empire, submitting to the plans of the powerful Han, when I will go to render homage in person.' Now the Emperor, compassionating the case of your highness in having abandoned a great kingdom, and condescended to submit to the condition of K'ang-keu, has sent the military commander under the Governor General to meet your highness with your wives and children. But fearing the inhabitants might be moved with alarm, we have not ventured to approach the city." This was followed by a succession of correspondence between the parties; till at length Kan and Ch'in forwarded a message to the following effect:—"We have made a long journey for the sake of your highness; yet up to the present time you have sent no prince of distinction or grandee to meet the general, to receive the Imperial instructions, or to tender his services. Why is your highness surreptitiously concocting some great scheme of deception, while you omit the rites of hospitality? After their long and weary journey, men and animals are utterly broken down, and the store of provisions is exhausted, so that it is to be feared we shall not be able to return. We beg your highness, in concert with your high Ministers, to devise some means for our relief." On the following day they advanced towards Che-che's city on the Too-luy river. They halted at a distance of three *le*, and formed into rank. Round the city could be seen flags and streamers of every colour, and several hundred men in armour on the walls. More than a hundred cavaliers were riding about under the walls, and about the same number of foot soldiers were clustered round the gates like scales on the back of a fish. These seemed to be planning the disposal of their troops; while those on the wall were bawling out defiance to the Chinese army. A hundred or more horsemen rode towards the camp, where the troops all stood ready with their bows bent, but the horsemen drawing aside, evaded the arrows. The Chinese detached a party to attack those round the city gates, when horse and foot all sought refuge inside. Kan and Ch'in then gave orders to beat to arms through the camp, and the sound of the drums was heard at the city walls. The city was defended on all sides at the entrenchments and gates of the barricades; the shield-bearers formed the van in the attack, and these were followed by the lancers

and cross-bow men. The archers aimed at the occupants of the galleries inside the city, when the latter rushed down and took up a position outside the earthworks, and inside the double stockades. There the arrows of the besieged succeeded in killing and wounding some of the attacking party. The besiegers then collected fuel and set fire to the stockades. At night several hundred horsemen tried to make their escape, but lost their lives in the attempt. When the Shen-yu first heard that the Chinese troops had arrived, he suspected the King of K'ang-keu, irritated against him, had called in the aid of the Chinese; but learning afterwards that the troops of Woo-sun and the other kingdoms were all in arms, he found there was no asylum open to him. He therefore returned again after he had left the city, saying:—"My best plan is to hold out on the defensive. The Chinese troops having come a great distance, will be unable to sustain a lengthened siege." Putting on his armour he ascended a gallery with his consorts and ladies to the number of several tens, all armed with the bow and arrows, presenting a bold front to the besiegers. At length an arrow from below struck the Shen-yu on the nose, while the ladies were all nearly dead with exhaustion and alarm. The Shen-yu descended, mounted his horse, rode off shooting as he went, and took refuge in the ladies' apartments. After midnight an opening was effected in the stockades; when those inside crossed the earthworks, ascended the city wall and shouted. At the same time, over 10,000 K'ang-keu mounted troops, who were stationed at ten or more places all round outside the stockades, answered the shouts of those within. During the night there was much running to the camp, greatly to the detriment of the Chinese cause. By daybreak the fire was raging in all directions, and the air was rent with the joyous shouts of the victors, while the noise of the drums and cymbals shook the very earth. The K'ang-keu troops then led the Chinese in on all sides; and the shield-men got within the earthworks. More than a hundred persons, male and female, of the Shen-yu's family ran to take refuge in the inner apartments of the palace. The Chinese set fire to the building, and strove to gain admission, when the Shen-yu was speared by the troops, and the military deputy, T'oo Heun, cut off his head. In the palace were found two of the Chinese envoy's tokens of credence, and the silk presents and despatches brought by Kŭh Keĭh and others. The captors delivered up the prisoners they had taken. The consort and heir-apparent of the Shen-yu, with distinguished princes and subordinates 1,518 persons in all, were decapitated; 145 were carried captive; and more than 1,000 submitted. These were distributed among the fifteen princes of the surrounding kingdoms, who had sent to assist in the siege. At this stage of the proceedings Kan Yen-show and Ch'in Tang prepared a statement to lay before the throne, to the following effect:—"Your servants have understood that the great theory of empire is unity. In ancient times there was the empire of Tang Yu, and now there is the formidable Han. Hoo-han-seay, the Shen-yu of the Heung-noo, has already declared himself a northern border vassal.

But Che-che Shen-yu rebelled, and would not acknowledge his crimes; while the people on the west of the Ta-hea all said that he could not be brought under vassalage to the formidable Han. Che-che's inhuman violence was being painfully felt among the people, and his great crimes cried aloud to Heaven for vengeance. Your servants, Yen-show and Tang, taking command of the voluntary forces, have carried out the retribution of Heaven. Relying on your Imperial Majesty, the spiritual intelligences and the dual powers, and looking to the celestial indications, at early dawn we assaulted the ranks of the refractory, defeated the enemy, and decapitated Che-che with his distinguished princes and subordinates. It would now be well to suspend their heads at the Barbarian Hotel in Kaou Street in the capital, in order that it may be clearly known to a distance of 10,000 *le*, that whoever contravenes the institutions of the formidable Han, however great the distance, the crime will certainly be punished." This matter was referred to the proper board for decision; when the Prime Minister K'wang Hăng, and the Grand Censor Fan Yen-show, delivered the following as their views:—"Were the heads of Che-che and his distinguished princes exhibited through the various kingdoms, the several barbarian races would all then inevitably become acquainted with the facts. According to the *Yuĕ-ling* section of the 'Book of Rites,' 'Spring is the time for covering up rotten bones, and burying putrid flesh.' Consequently the heads ought not to be suspended." The Carriage Cavalry General Heu Kea, and the Right General Wang Shang said:—"According to the 'Spring and Autumn Annals,' when there was a state assembly at Keă-kŭh, the jester She having ridiculed the princes, he was put to death at the instigation of Confucius. Although it was then the height of summer, the head and feet of the victim were suspended at different gates. The heads ought now to be suspended for ten days, and then buried." An Imperial rescript then ordered the generals to hold a council on the subject. Now it so happened that on a previous occasion the Board Clerk Shĭh Hëĕn had wished Kan Yen-show to marry his sister; but Kan had refused. At the same time K'wang Hăng and Fan Yen-show, who were both disgusted with Ch'in Tang's haughty bearing, brought the following charges against him:—"During the siege, Ch'in had kept an eye on the treasure that was captured; and when it was brought into camp he had made an unlawful appropriation of the same. As Superintending Official and Deputy Protector he had forwarded letters along the road to cause recruits to be raised. In proof of this we may refer to his memorial, in which he says:—'Your servant, in concert with the officers and troops, has put to death Che-che Shen-yu. He has happily succeeded in taking captives and crushing the spirit of insubordination, thus restoring order among the people to a distance of 10,000 *le*. It would be well to send an envoy to meet and congratulate the victors on the road.' Now it is plain that the superintending official has rebelled, and taken the recruits with him. As proof of this we may refer to what he says of having taken vengeance on

the Shen-yu. Should the Emperor send troops with orders to suspend the heads and prepare entertainments along the road, it will be in excess of military custom." When they came to discuss the question of merit, Shĭh Hëĕn and K'wang Hăng thus expressed their views:—"Kan Yen-show and Ch'in Tang have raised an army on their own responsibility, and by their overbearing conduct have fortunately been successful in escaping chastisement. If further rank and land be conferred on them, then future envoys, striving to obtain a marquisate, will succeed in raising troubles among the barbarians, and thus involve the empire in difficulties, which will gradually become inextricable." The Emperor, however, looked with favour upon the merit of Kan and Ch'in, and took exception to the counsel of K'wang Hăng and Shĭh Hëĕn. The consultation having lasted for a long time without arriving at any decision, the Clan Rector Lew Heang laid the following memorial before the throne:—"Che-che Shen-yu imprisoned and put to death our envoys and their followers, and his innumerable barbarities had become notorious, so that our prestige in foreign countries was being injured, and our influence destroyed; being a source of grief to all the Ministers of your Imperial Majesty. In considering the question of chastisement, your Majesty in your luminous penetration has not forgotten that Kan Yen-show, the Governor General of the Western regions, and Ch'in Tang, the Assistant Deputy Protector, rested on the indication of your Sacred will, trusting to the spiritual intelligences. While ruling the princes of all the barbarian races, and holding the control of the troops of the various cities, they yet advanced in person to the most distant regions, passing through a hundred unheard-of dangers. Then making an incursion on K'ang-keu, they destroyed the five-fold defended city, pulling down the satrap's flag. They beheaded Che-che, and suspended the Imperial banner at a distance of more than 10,000 *le*. They exalted the prestige of the empire to the west of the Kwăn-lun Mountains; they swept away the disgrace of Kŭh Keĭh's affair, and established the most resplendent merit. Now the barbarians will tremblingly submit, being all filled with trepidation. Hoo-han-seay, seeing that Che-che is punished, will be moved with joy, and also with fear; and when the rumours reach him, he will hasten to show his allegiance by prostrating himself before the throne. Wishing to preserve the northern border territory, the Shen-yus through all ages will acknowledge themselves vassals. Thus merit of a thousand years' standing has been achieved, and peace has been secured for 10,000 generations. There is no higher instance of patriotism among the Ministers than this. In former times, when Fang Shuh and Keĭh-foo, Great Statesmen of the Chow dynasty, chastised the Heen-yun for King Seuen, the barbarians all submitted, as commemorated in the "Book of Odes" (Part II. Book iii. Ode 4, ver. 4):—

> "Numerous were his war chariots,
> Numerous and in grand array,
> Like the clap or the roll of thunder their onset.

Intelligent, and true is Fang Shuh.
He had gone and smitten the Heen-yun,
And the tribes of King came, awed by his majesty."

We read in the "Book of Changes":—"It is a good thing to behead the chief offender, to obtain the submission of the rebellious class." This commends the slaughter of the head criminal, since it causes all the refractory to return to their allegiance. Now the capital punishment inflicted and the trepidation created by Kan Yen-show and Ch'in Tang is a feat not equalled even by the beheading of the chief offender of the "Book of Changes," or the thunder-clap or roll of the "Book of Odes." In speaking of great merit, little faults are not noticed. In selecting an object of exquisite beauty, petty blemishes are tolerated. Sze-ma Fă says:—"In rewarding military merit, a month should not be allowed to elapse; for the people should quickly appreciate the benefits of well-doing."

By the rapid attainment of military merit, the service of the men is enhanced. When Keĭh-foo returned to Chow, he received liberal gifts; as it is said in the "Book of Odes" (Part II, Book iii, Ode 3, ver. 6):—

"Keĭh-foo feasts and is glad;
Great happiness is his.
In returning from Haou,
Distant and long had been our march."

At 1,000 *le* they considered Haou to be very distant; how much more extreme the exertion when 10,000 *le* off! As Kan Yen-show and Ch'in Tang have not received this great happiness for their reward, while on the other hand they have risked their lives, and long humbled themselves before the ranks, they have not been treated in a way likely to encourage meritorious soldiers who are expert with their lances. Formerly, when Hwan the Duke of Tse had the merit of doing honour to the Chow before him, and the guilt of exterminating Heang behind, superior men considered his merit had made amends for his delinquency, and were silent regarding his conduct in the past. Again, Le Kwang-le, the Urh-sze General, sacrificed an army of fifty thousand, and spent an untold amount of silver in a laborious service of four years, and merely obtained thirty swift horses for his trouble; and although he secured the decapitation of Wuh-kwa, the King of Ta-wan, this was a very inadequate return for the expense. His own sins were very many; yet in consideration of his military achievements for a distance of 10,000 *le*, the Emperor Woo-te overlooked his faults. He was then promoted Marquis of Pae-leang, with three high Ministers, an emolument of 2,000 piculs of rice, and a retinue of over a hundred persons. Now K'ang-keu was stronger than Ta-wan, the renown of Che-che was greater than that of the king of Ta-wan, and the crime of killing an envoy is much heavier than that of retaining horses. But Kan Yen-show and Ch'in Tang have not troubled the empire for troops, nor have they used a bushel of the

empire's rice; so that in this respect their merit is a hundred times greater than that of the Urh-sze general. Further, when Chang Hwuy was about to attack Woo-sun, and when Ching Keih went to meet the Jih-ch'uh prince coming in person, the earth was rent with acclamation, and they received rank; hence it was said that their martial dignity and laborious service were greater than those of Fang Shuh and Keĭh-foo; and their manifest merits compensating their faults, were even more abundant than those of Duke Hwan of Tse and the Urh-sze general. Now the merit of the recent events is higher than those of Ching Keĭh, Marquis of Gan-yuen, and Chang Hwuy, Marquis of Chang-lo. But the great merit of Kan and Ch'in has not been proclaimed, while their petty faults have been overstated. Your servant is oppressed with the opinion that the heads of the malefactors ought to be exposed to view for the proper period, and duly inserted in the records. Absolve the victors for past faults, and honour and prefer them by rank and position as an encouragement to the meritorious." Consequent on this, the Emperor issued the following rescript:—"Che-che Shen-yu of the Heung-noo, in contravention of established rites, detained and put to death China's envoy and suite, rendering himself exceedingly obnoxious to the principles of justice. How can I forget this? Consequent on this, much ineffectual travelling took place, but there was no invasion of the offender's territory. The army was harassed by painful expeditions, wearying the troops till they were well-nigh exhausted; so that we were obliged to endure the wrong in secret, without giving utterance to our feelings. Now Kan Yen-show and Ch'in Tang, watching their opportunity, took advantage of the time to secure the aid of the various kingdoms; and raising an army on their own responsibility, peremptorily invaded the domain of the delinquent. Relying on the spiritual intelligences of heaven, earth, and the ancestral temple, they took vengeance on Che-che Shen-yu, decapitating him, together with his consort, his nobles, distinguished princes and subordinates, to the number of a thousand in all. Although in this matter they have overstepped the rules of propriety and transgressed the law, yet they have not troubled the empire for a single man's service, nor have they spent a *tael* from the Imperial treasury; but supplied themselves with provisions from the enemy's stores, for the use of the army. They have thus established their merit at a distance of more than 10,000 *le*. All the barbarians are moved with awe by their prestige, and their renown has spread to the remotest seas. They have rendered a service to the empire in improving the character of the troops; and those who settle down on the borders may now rest in peace. Still they have rendered themselves amenable to the punishment of death or exile, and their crimes have been under consideration by the authorities. But I, feeling great compassion for them, hereby grant a free pardon to Kan Yen-show and Ch'in Tang." The Emperor then ordered the dukes and high ministers to consult together as to their promotion. The assembled deliberators decided that the rule prescribed by military

law, regarding the capture and decapitation of a Shen-yu, ought to be complied with. K'wang Hăng and Shĭh Hëĕn, however, said that Che-che having fled into exile, had lost his kingdom; and clandestinely exalting his pretensions, he was not really a Shen-yu. The Emperor quoted the precedent in the case of Ching Keĭh, the Marquis of Gan-yuen, who was promoted to the benefice of a thousand families. After hearing some further objections from K'wang Hăng and Shĭh Hëĕn, Kan Yen-show was gazetted as Marquis of E-ching, while Ch'in received rank as Marquis of Kwan-nuy. Each was endowed with a benefice of 300 families, and had a bonus of a hundred pounds weight of gold. The event was declared before God and in the ancestral temple, while a general amnesty was proclaimed throughout the empire. Kan Yen-show was inducted as Deputy Protector of Chang-shwuy, and Ch'in Tang was made Deputy Protector of Seay-shing. Kan Yen-show was successively removed to the offices of Deputy Protector of the City Gates and Army-defending Protector General, and died during his incumbency.

Soon after the accession of Ching-te (B.C. 32), Ch'in's old opponent, K'wang Hăng, again memorialized, saying:—"While under Imperial commission, with an emolument of 2,000 piculs, Ch'in Tang issued his own commands among the barbarian nations. He was himself the first unjustly to appropriate the booty taken in K'ang-keu, and warned his subordinate officers that in such an extremely distant region matters would never be inquired into. Although this took place anterior to his pardon, still it is not right that he should be in a position of trust." Ch'in stood exculpated from these charges, however. After this he laid a statement before the throne to the effect that the hostage prince of K'ang-keu was not really the king's son. Upon investigation it was found that he was truly the king's son, and Ch'in was thrown into prison on a capital charge. While still in durance, the Grand Middle Great Statesman, Kuh Yung, laid the following apology for Ch'in before the throne:—"Your servant has heard that Duke Wăn of Tsin caused Tsze-yuh Tĭh-shin, an officer of Tsoo, to sit at a side mat. When Ma-fuh, the Seaou General, was overbearing in his conduct to Ts'in, Leen Po of Seaou could not bear to observe troops in the Well defile. More recently, during the Han, when Che-che had his capital at Wei, although a Heung-noo, he did not dare to go south to the Sha-mo desert. From such instances as these we may see that the general who is victorious in battle is as claws and teeth to the empire, and may not be treated slightingly. When the superior man hears the sound of the drums, his thoughts naturally revert to his servant in command of the troops. It appears to me that Ch'in Tang, the Marquis of Kwan-nuy, having formerly been appointed Assistant to the Governor General of the Western regions was enraged at Che-che's unprincipled conduct; and pitying the king's inability to chastise him, he excogitated a plan of action, impetuously called out an army of patriotic braves, and hastily got them in train. When the troops were set in

motion they made a rapid march across Woo-sun, and assembled at a distant point on the Too-luy river. Destroying the triply-fortified city, he decapitated Che-che, and reported the punishment of the ten years' refugee, thus wiping off the disgrace of the border official stations. His prestige has overawed all the barbarians, and the fame of his military prowess has extended to the Western sea. From the commencement of the Han dynasty, no general had been found competent to invade the outside regions. Now Ch'in Tang stands charged with perjury, and having been cast into prison, has been long in bonds; and although much time has elapsed, his case is not yet decided. The officials at whose instigation he is confined wish him to be submitted to capital punishment. In former times, when Pih K'e, the Ts'in General, had captured Ying-too in the south, and outwitted Seaou-kwa in the north, he was afterwards put to death at T'oo-yew for some trifling fault; and the people of Ts'in all shed tears of compassion for his fate. Now should Ch'in Tang be submitted to the executioner's knife, there will be an instantaneous outburst of tears of blood for a distance of more than 10,000 *le*. His meritorious deeds have been presented in the ancestral temple, and declared before God at the annual sacrifice. The armour-clad warriors, who invariably look for justice, will deem this a crime, and an inglorious enormity. 'The Book of Chow' says:—'The proper attitude for a prince is to remember men's merits and forget their faults.' When dogs and horses exert themselves for their masters, their service is rewarded by cloths and coverings. How much more should the meritorious service of a Minister of the empire be acknowledged! I fear your Imperial Majesty has disregarded the sound of the drum; and not having examined the meaning of the 'Book of Chow,' has forgotten to give the cloth or the covering to a useful servant. Should Ch'in Tang die, his retainers will consult together, and there will be disquietude among the people, like the indignation of the people of Ts'in. That is not the way to encourage Ministers to brave difficulties to the death for their country." When this memorial reached the Emperor he set Ch'in at liberty, but deprived him of his titles and reduced him to the ranks.

Several years after this, Twan Hwuy-tsung, the Governor General of the Western regions, being surrounded by Woo-sun troops, despatched a horse express to Court with a letter, signifying his desire to raise troops from the various Western kingdoms and from Tun-hwang for self-protection. The Prime Minister Wang Shang, the Generalissimo Wang Fung, and all the high officials, deliberated together for several days without coming to any decision; when Wang Fung suggested:—"Ch'in Tang is fertile in devices, and practised in the ways of foreigners. His opinion might be asked." An Imperial rescript then summoned Ch'in to the palace. It happened that his arms were paralysed from the effects of the cold and sickness brought on at the time he attacked Che-che. When he entered the palace the Emperor consequently dispensed with the customary prostrations in his case; and Twan Hwuy-

tsung's memorial was shown to him. Ch'in excused himself, remarking:—"The high civil and military magnates are all men of wisdom and ability, intelligent and prudent; but your humble servant has been cast aside as infirm and useless, and is now incapable of planning any great undertaking." The Emperor said:—"There are superior men for State emergencies. Do not withhold your counsel." Ch'in replied:—"Your servant is of opinion that there is no great cause for anxiety." "How so?" said the monarch. Ch'in continued:—"Five foreign soldiers are equal to one Chinese. How is this? The swords they use are rough and blunt; and their bows are of the clumsiest description. Now I hear they have acquired something of Chinese ingenuity in the manufacture; still they are but as three equal to one of ours. Again, according to the military canons, when the guest is double and the host only half, then war ensues. But the multitude encircling Twan Hwuy-tsung are insufficient to conquer him. Let not your Imperial Majesty be disquieted. Light troops travel at the rate of 50 *le*, while heavy troops make only 30 *le*. Now Twan Hwuy-tsung wishes to raise troops from the various kingdoms, and from Tun-hwang. In course of time they would arrive, and might serve for retaliation, but they would be of no use to deliver in a case of emergency." The Emperor said:—"How is the siege to be raised? In what time will it certainly be raised?" Ch'in, knowing that the Woo-sun force was like a heap of tiles without any bond of union, and would be unable to maintain the siege for long, judging by former events not more than a few days, answered:—"The siege is already raised." Then doubling up his fingers to number the days, he said:—"Within five days you ought to have good news." In four days a military despatch arrived, with the news that the siege was raised. The Generalissimo Wang Fung remarked in a memorial, that—"Among the inner councillors on State business, none is better able to arrive at a correct conclusion than Ch'in Tang. He is clear as to the laws, he judiciously discriminates according to the position of affairs, and in tendering his views he pays great attention to the practical. When he receives money from others, he embodies his financial report in a memorial; and this has eventually brought him to ruin."

Ch'in was originally on good terms with Keae Wan-nëën, the Superintendent of Public Works. Since the time of the construction of the Wei tombs during the reign of Yuen-te, the people had not been removed to any new city. Several years after Ching-te had erected the Ts'oo tombs, the work was again carried on south of the pavilion devoted to the music of the Pa tombs. Keae Wan-nëën taking counsel with Ch'in, the latter said:—"The work executed by the architect Yang Kwang-e in the time of Woo-te, was submitted to the Emperor for approbation. Having myself induced the Superintendent of Public Works, with the Superintendent of Agriculture and Inner Deputy Kăng Show-chang, to build the T'oo tombs, the rank of Marquis of Kwan-nuy was conferred on me; and the Superintendent of Public Works, Ching-ma

Yen-nëën, was placed on the civil list at 2,000 piculs of rice. Now the great merit of repairing the Ts'oo tombs and building the city having been completed, Keae Wan-nëën ought to receive a handsome reward. My wife and family are in Chang-gan; my children were brought up in Chang-gan, and do not like the east country. I may ask to be removed, and might receive the gift of a house and land all complete." The thought commended itself to Ch'in, who laid the matter of promotion before the throne, saying:—"The land of the Ts'oo tombs, which belongs to the capital, is very rich, and might be erected into a district. For more than thirty years past the people of the empire have not been removed. Wealthy men on the east of the barrier are becoming very numerous; they are marking out the good land for themselves, and are availing themselves of the services of the poor people. These latter might be removed to the Ts'oo tombs, in order to strengthen the capital, and weaken the feudal princes, which would tend to equalise the wealth of the middle and lower classes. Tang wishes to be the first to move to the Ts'oo tombs with his family and dependants." The Emperor fell in with this scheme, and began the erection of the city of the Chang tombs, intending afterwards to populate it with people from various regions. Keae Wan-nëën imposed on himself the task of finishing the city wall in three years, but died before it was completed. The Ministers then strongly represented the unsuitability of the site. The question was referred to the authorities in charge for deliberation. The latter all said:—"The site of the Chang tombs being low, in order to raise it to the proper height the earth has to be heaped up like a mountain, while it is proposed to place the adjoining buildings on the level ground. The alien earth will not be protected by the invisible intelligences; nor can the low outer portion be defended by troops. The expense of the work will amount to millions, and will have to be carried on at night by candle-light. The expense of bringing earth from the eastern hills will make it as costly as grain. When the work is carried on for several years, distress from fatigue will be felt throughout the empire; the Imperial house will be wearied out, and the resources of the treasury will be exhausted; while the masses of the people will bitterly bewail their fate. The ancient tombs were raised with the natural earth of the locality, according to celestial principles, the height being regulated by those of the ancestors adjoining. Ten years of meritorious service has already been expended on them. It would be well to return again to the ancient tombs, and not remove the people." The Emperor then issued a rescript, ordering a cessation of the works at the Chang tombs, the words of which are found in the "Record of the Reign of Ching-te." The Prime Ministers and censors requested that the houses in the city of the Chang tombs might be abandoned. Before their memorial was handed over to the proper board, Ch'in was asked why his official residence was not transferred, so that he had no occasion again to remove? To this he replied:—"As district officer, I am obedient to the wish of the Ministers; still

there will be another removal." At that time, Shang, the Marquis of Ching-too, who was newly-appointed Cavalry Superintendent, General of the Guard and Assistant Administrator, who had been on bad terms with Ch'in, hearing these words, said:—"Ch'in has been exciting the multitude," and he was thrown into prison. It appeared on investigating his crimes that formerly when Ch'in was Cavalry Protector General, Wang Mang laid a letter before the throne, saying:—"My father dying early in life, I his only son was not promoted; my mother, Ming-keun, applying herself with still more unwearied assiduity in the service of the empress-dowager." Being entitled to promotion he was eventually made Marquis of Sin-too. After this, Kow Tsan, the Protector General of Shwuy-hăng, who was uterine brother of the empress-dowager, died; and his son K'ieh was among the Imperial attendants. The widow of Kow Tsan wishing to obtain promotion for Kieh, Ch'in Tang received fifty pounds weight of gold from her, with the promise that he would forward a memorial for her according to her desire. Now it happened that Chang Kwang, the Governor of Hung-nung, stood charged with having received a million cash, for forwarding a fraudulent and unprincipled petition to the throne. The Emperor ordered an investigation; and fearing he should be cast into prison, he sent a messenger to inform Ch'in. The two million cash for which Ch'in had given his promise belonged to the same class of offence for which the other had been impeached. This took place before he received his free pardon. Afterwards, Hih Lung, the Governor of the region of Tung-lae, sent a person to make inquiry of Ch'in regarding the matter. Ch'in said this was for the payment of petty transactions connected with what is called the Black-gate, of which the disbursements and receipts are at no stated times. Hence Hih Lung said it was not a periodical payment. Again, as to his remark that "there will be another removal," the words had been passed from mouth to mouth by ten or more persons; and the Prime Ministers and censors memorialised to the effect that:—"Ch'in had excited the multitude to evil; and had unjustly attempted to impose perverse views on the sovereign; his words being highly improper, and greatly wanting in reverence. T'ing Hwuy and Seaou Tsăng-show in consultation have considered that if this iniquity is not a capital crime, it is difficult to know how to class the offence. Your servants in employing subordinates have erred in judgment; and have therefore brought this case before T'ing Hwuy for decision. Let unparalleled cases be first heard, that the punishments may be rectified, and human life respected. The intelligent sovereign, compassionating the people, has issued an order, which has already been published, to put a stop to operations at the Chang tombs, that the officials and people may not be removed. But Ch'in having falsified the Imperial intention, saying, 'There will be another removal,' although the words are calculated to stir up a movement; yet as they have not been widely circulated, there has been no rising among the people, and it can scarcely be said that he has excited the multitude. Ch'in

having fraudulently fabricated a statement, however, for which there was no foundation, his words are highly improper, and greatly wanting in reverence." An Imperial order was then issued, which said:—"Yen Hwuy and Seaou Tsăng-show have judged rightly. Ch'in has the merit of having formerly reduced Che-che Shen-yu. Let him be reduced to the level of the common people, and removed to the border." The order said also:—"Formerly Keae Wan-nëën, the Superintendent of Public Works, fraudulently and disloyally concocted false statements, and made oppressive exactions; vexing the people with troubles, and making use of their services in violent and oppressive labours. Numbers of troops who had incurred the death penalty were seen in bands. Bitterness spread through the masses, and from sea to sea their hopes were tempered with complaint. Although he has received a free pardon, he must not reside in the capital." Ch'in Tang and Keae Wan-nëën were consequently removed to Tun-hwang. After a time, the Governor of Tun-hwang memorialised thus:—"Formerly Ch'in Tang personally chastised Che-che Shen-yu, and his prestige having spread through the foreign kingdoms, it is not suitable for him to be near the border strongholds." By Imperial order he was then removed to Gan-ting (now the district of Lung-tĭh in the prefecture of Ping-leang, in Kansuh province). While there, the Counsellor Kăng Yuh presented a letter to the throne, pleading Ch'in's cause, against the injustice to which he had been submitted, saying:—"Kan Yen-show and Ch'in Tang have expanded the sacred influence of the Han, and made known its prestige in remotely distant parts. They wiped out the shame for many years' standing of the Imperial family; reduced the intractable princes of the remotest regions; and attached the most ungovernable captives at a distance of 10,000 *le*. How was this? The former Emperor treated them kindly, and issued an illustrious rescript proclaiming their merits. He also changed the style of the years (B.C. 33), that the memory of their actions might be everlastingly handed down through changing generations. Corresponding with this, a white tiger was presented from the southern regions; and there was no alarm or precautions taken at the border. When the sovereign was laid on a sick bed, the same idea was still carried out, nor were the meritorious forgot. The president of a supreme board was on several occasions sent to institute inquiries, and the Prime Ministers were constrained to acknowledge their merits. Only the Prime Minister K'wang Hăng made objections, and refused to accede. Kan Yen-show and Ch'in Tang were promoted to benefices of several hundred families, and now we see how such meritorious Ministers and distinguished warriors lose hope. When the Emperor Ching-te came to the throne, he obtained the prestige of successful invasion; the troops were at rest; the Imperial family was undisturbed; and the depraved and slanderous insinuations of great Ministers had little weight at Court. Difficulties from first to last have arisen from a desire to guard against imaginary contingencies. Some wishing to have undivided control of the prestige, merit had

to give way to envy, and Ch'in was treated as a blockhead. Being unjustly held a prisoner, he was unable to exculpate himself. Eventually, for no crime committed, he was exiled to Tun-hwang in his old age; which being directly on the high-road to the Western regions, caused officers and subjects of irreproachable name to turn on their heels, while Ch'in himself became the laughing-stock of the remaining captives who had been in the service of Che-che. Truly it is mournful. Hitherto those who have received a commission to the outer barbarians have lost no opportunity of adducing the chastisement of Che-che, in order to exalt the resources of the Chinese empire. Now to put forward the merits of men in order to frighten the enemy, while the persons of the same are sacrificed to please insinuating flatterers, how truly painful! In the time of peace we should not forget danger; in the season of prosperity we ought not to ignore the possibility of decay. Now the Imperial house does not possess the well-filled treasury, resulting from the many years of economical government of Wăn-te; nor has it the subjects courageous and distinguished for taking the enemy that were presented and received at the Court of Woo-te. Ch'in Tang is the only one that can claim that honour. If past ages should not have attained to the glory of your Imperial Majesty, it is to be hoped your Imperial house will look back and record the meritorious, and put the seal of promotion on his tomb, in order to encourage the emulation of posterity. Ch'in Tang happily succeeded in obtaining merit during the sacred years of your reign; but ere long, depraved Ministers gaining the ascendancy, he was scourged away to a distant abode. Should he flee into exile, skulking in obscurity, and die in a homeless land, good men looking at his case from a distance will reckon thus: Ch'in's merit is unattainable for ages, and his faults are such as are common to human nature. Such is Ch'in, and although his bones and sinews are rent asunder, and his bare body exposed to the heat and cold, yet still he is under the control of mere talkers, and is held captive by jealous Ministers. On this account your servant is still more distressed for the Imperial house." On the presentation of this memorial the Emperor recalled Ch'in, and he ended his days in Chang-gan. Some years after his death, when Wang Mang the Duke of Gan-han, held the reins of government, calling to mind the former favours of Ch'in Tang, and desiring to flatter the empress-dowager, he reported the merit of chastising Che-che, in the temple of Yuen-te, whom he honoured by designating Kaou-tsung. In remembrance of the former merits of Ch'in Tang and Kan Yen-show, he bestowed large gifts on Po and How-ching, but made no gift to T'oo Heun. He then further promoted Ts'een, the grandson of Kan Yen-show, to a benefice of 1,600 families. Ch'in Tang was canonized as Robust Marquis of Po-hoo; and his son Fung was made Marquis of Po-hoo. T'oo Heun was made Marquis of Taou-teĭh.

B. The following is the Memoir of Chang Këĕn, as given in the "Tsëeu Han Shoo," Book lxi, fol. 1-6.

CHANG KËEN was a native of Han-chung. In the *keen-yuen* period (B.C. 140-135), when he held a subordinate office in the Council, some of the subjects of Heung-noo reported that the Yuĕ-she had been defeated by their countrymen, who had converted the king's skull into a drinking bowl. The Yuĕ-she had decamped under a strong feeling of irritation against the Heung-noo; but standing alone, it was hopeless to attempt retaliation. On hearing this, the Chinese—who were looking for some occasion to extinguish the power of the Heung-noo—wished to open up communication with their old neighbours the Yuĕ-she, but unfortunately the way to their new settlement lay through the Heung-noo country. When it became a question who should undertake the commission, Chang Këĕn requested the appointment, and was accredited to the Yuĕ-she, to be accompanied by Kan-foo, a slave of the T'ang-yih family. They left the country by Lung-se, and attempted the passage through the Heung-noo; but were stopped by the latter, and taken before the Shen-yu. The chieftain thus addressed them when he had ascertained their object:—"The Yuĕ-she dwell to the north of my territory. How can the Chinese think of holding communication with them? Should I wish to send an envoy to the Yuĕ, would China suffer it?" Chang Këĕn was accordingly detained, and forced to live among them for more than ten years, during which time he married a native of the tribe, and begat children. Still he was ever careful of his token of credence, which he never lost; and being located in the western part of the Heung-noo country, he contrived eventually to make his escape, along with his followers, and took the road towards the Yuĕ-she. After a rapid journey westward for several tens of days, he reached Ta-wan. The king of that country, who had heard of the superabundant wealth of China, had wished to open up intercourse with the empire; but had hitherto been unable to do so. On seeing Chang Këĕn he was delighted, and inquired the object of his journey. The envoy replied:—"I am sent by China on a mission to the Yuĕ-she, but have been detained on the way by the Heung-noo. Now I have escaped, and wish your Majesty to send guides to escort me on the way. Having reached my destination, and returned to China, the Emperor will send presents of untold value to your Majesty." These words satisfied the King, who sent guides and interpreters to conduct the party to K'ang-keu. The K'ang-keu, in their turn, forwarded them to the Ta Yuĕ-she. When the King was killed by the Heung-noo, his widow was raised to the supreme power, and having reduced the Ta-hea they ruled over them. The country they now inhabited was rich and fertile; brigandage was rare, and the people were peaceful and happy. Considering the distance they were from China, they would not entertain the envoy's overtures, and had not the slightest intention of taking vengeance on the

Heung-noo. Chang Këën then went to the Ta-hea; but to the end he could get no satisfactory hold on the Yuĕ-she; and after a stay of more than a year, he returned. Following the Southern mountains, he tried to make his way through the country of the Keang, but was again taken by the Heung-noo. There he was detained more than a year, till the Shen-yu died, when the nation falling into a state of anarchy, he was able to make his escape with his foreign wife, and Kan-foo of T'ang-yĭh, who all fled to China. Chang Këën was then made Grand Middle Great Statesman, and Kan-foo of T'ang-yĭh was made Prince of Commission. Chang Këën was robust and impetuous, generous and confiding, and had gained the affections of the barbarians. Kan-foo of T'ang-yĭh was a Heung-noo by nation, and excelled in archery. In times of emergency he was able to supply the party with food, by the game that fell under his arrows. When they commenced their journey the party consisted of more than a hundred men; they were absent 13 years, and only two of the original company returned. The envoy personally visited Ta-wan, the Ta Yuĕ-she, the Ta-hea and K'ang-keu. Besides these, he collected accounts of five or six of the neighbouring great kingdoms, and gave to the Emperor a description of their outlines and productions; the details regarding which are all given in the "Notes on the Western Regions." Chang Këën is reported to have addressed the monarch in such terms as the following:—"When your servant was among the Ta-hea he observed they had Keang bamboo staves, and Shuh cloth. On inquiring where they procured these things, the Ta-hea people replied: 'Our merchants go to Shin-tūh to buy them. Shin-tūh is south-east from the Ta-hea, several thousand *le*. The inhabitants are accustomed to live in permanent settlements, the same as the Ta-hea. The country is low, damp, and hot; and the people go to war on elephants. The boundaries of the kingdom extend to the great ocean.' According to my estimate, the Ta-hea are situated south-west from China, at a distance of 12,000 *le;* and as Shin-tūh, where the Shuh productions are found, is several thousand *le* to the south-east of the Ta-hea, it seems that place cannot be far distant from Shuh. Now it is dangerous to pass through the Keang, in order to reach the Ta-hea; for the Keang are inimical. A little farther to the north we get taken by the Heung-noo. We ought to go straight through from Shuh, and then we should escape the brigands. Your Imperial Majesty has heard of Ta-wan, the Ta-hea, and Gan-seĭh, which are all great kingdoms, having many things that are strange, and natural productions special to each. Their customs resemble those of China in some respects; their military are feeble; and they have a high appreciation of Chinese treasures. To the north are the Ta Yuĕ-she and K'ang-keu, who have formidable armies. By dint of presents they might, with the prospect of gain, be induced to render homage to China, and thus verily by diplomacy we might succeed in securing their attachment. Our territory would thus be expanded 10,000 *le*, embracing people of every custom, and requiring a ninefold staff of interpreters; while the prestige of

the empire would be all-pervading from sea to sea." The Emperor was transported with delight, and fell in heartily with Chang Këën's suggestions. He then gave orders that exploring parties should be sent out from Shuh and Keen-wei, in four different directions. One party went by Mang; one by Tsŏ; one by Se and K'eung; and one by Pŏ; each party reaching a distance of between 1,000 and 2,000 *le*. Those who went north were stopped by the Te and Tsŏ tribes; and those who went southward were stopped by the Suy and Kwăn-ming. The Kwăn-ming tribes have no chiefs, and are much given to brigandage; and so the Chinese envoys suddenly met their death at the hands of these marauders. To the end a passage could not be opened in that direction; but they heard of some countries about 1,000 *le* to the west, named Teen and Yuĕ, where the inhabitants rode on elephants, and the Shuh traders, who carried on a clandestine commerce with them, occasionally went there. Consequent on this, the Chinese first penetrated as far as the kingdom of Teen, in trying to find a road to the Ta-hea. When the Chinese first tried to open a communication through the south-western barbarians, after incurring a heavy expense, the enterprise had to be abandoned. When Chang Këën, however, spoke of the possibility of a communication with the Ta-hea, they were again brought into contact with the south-western tribes. When Chang Këën, as Deputy Protector, followed the Generalissimo in an attack on the Heung-noo, by his knowledge of the places where water and pasture were to be found, he was the means of saving the army from much suffering, and was in consequence created Marquis of Po-wang. This took place in the year B.C. 123.

Two years later, Chang Këën, as Guard Protector, left Yew-pĭh-ping with Le Kwang, for an attack on the Heung-noo. The latter surrounded General Le, who lost the greater part of his army on the occasion. Chang Këën, who had failed to bring up his contingent at the appointed time, had rendered himself amenable to decapitation; but the Emperor was pleased to pardon him, reducing him to the status of the common people. This same year the Light-horse General defeated the Heung-noo, and killed some tens of thousands on the western border, advancing as far as the Ke-leen Mountains. In autumn, the Prince of Kwan-ya brought his numerous followers, and tendered his allegiance to China; and the territories of Kin-ching, Ho-se, Se-ping, and Nan-shan, and as far as the Salt Marsh, the country was clear of Heung-noo. At that time the Heung-noo were rarely seen at Court.

Two years after this the Chinese attacked the retreating Shen-yu on the north of the desert. The Emperor several times asked Chang Këën regarding the Ta-hea tribes, when Chang, although he had been degraded from the nobility, thus addressed the sovereign:—"When your servant was residing among the Heung-noo he heard that the King of Woo-sun was styled Kwăn-mo. Originally the Kwăn-mo's father, Nan-tow-mo, and the Ta Yuĕ-she, both had small kingdoms between Ke-leen and Tun-hwang. The Ta Yuĕ-she attacked and killed Nan-tow-mo, and seized his land; when his

people fled to the Heung-noo. His son, the Kwăn-mo, being newly born, his guardian, the Poo-tsew Heĭh-how, fled with the infant in his charge, and deposited him among the grass. Going to seek nourishment for his charge, on his return he found the child being suckled by a wolf; while a bird with some flesh in its beak alighted by his side. Looking on these as tokens of the child's supernatural character, he then took him to the Heung-noo, where the Shen-yu conceived a liking for him, and brought him up. On reaching manhood, the former subjects of his father were placed under his command; and on several occasions he distinguished himself by military successes. About that time, the Yuĕ-she, who had been defeated by the Heung-noo, attacked the King of the Sae on the west; and the latter taking flight to a great distance southward, his territory was occupied by the Yuĕ-she. The Kwăn-mo, who now felt himself strong, requested permission from the Shen-yu to avenge his father's wrongs; moved westward, attacked and defeated the Ta Yuĕ-she, who fled still farther to the west, and settled in the country of the Ta-hea. The Kwăn-mo took the mass of the people under his control, and remained in the country, where he gradually raised a powerful army. On the death of the Shen-yu, he refused any longer to render homage to the Heung-noo. The latter sent an army to attack him, but the expedition returned without success. The belief in his supernatural character was thereby strengthened, and the Heung-noo were careful to keep him at a distance. Now the Shen-yu having been recently coerced by China, and the original country of the Kwăn-mo being empty, while the barbarian races retain a lingering affection toward their fatherland, and at the same time covet the treasures of China, truly this is the time to send rich presents to Woo-sun, and invite them eastward to occupy their old country. Let the Emperor send his daughter in marriage, and cement a fraternal alliance with the Kwăn-mo. He will then listen to the Emperor's instructions, and thus the right arm of the Heung-noo will be broken. Woo-sun being thus attached, the Ta-hea tribes on the west may all be induced to submit themselves as vassals." The Emperor approved of these suggestions; and Chang Këĕn was made Secretary and General, with the command of 300 men, with two horses to each man, and over 10,000 oxen and sheep; with supplies of gold and presents of silk to the value of several tens of millions of cash. Many of his followers held tokens as assistant envoys, who might be sent on commission to neighbouring kingdoms along the road. When Chang Këĕn arrived at Woo-sun he delivered the Imperial edict, but he could not bring the matter to any satisfactory conclusion. The details regarding this are to be found in the "Notes on the Western Regions." Chang Këĕn then despatched the assistant envoys to Ta-wan, K'ang-keu, the Yuĕ-she, and the Ta-hea; while Woo-sun sent interpreters and guides with them. Woo-sun also sent a mission of several tens of persons to escort Chang Këĕn back, with some tens of horses as a peace-offering to the Emperor. The envoy had orders to avail himself of the occasion to observe the state of

China, and then became aware of its magnitude. Chang Këĕn, on his return, was made Traveller-in-chief, and in little more than a year he died.

Above a year later, the envoys who had been sent to communicate with the Ta-hea tribes, nearly all returned, bringing some of the natives of these countries with them. The intercourse of China with the countries in the north-west commenced from this time, so that Chang Këĕn has the merit of having opened up the road. Succeeding envoys who were despatched to those parts all spoke of the Marquis of Po-wang as their passport to the favour of foreign kingdoms, and foreign nations gave credence to them on this account. After this, Woo-sun eventually contracted a matrimonial alliance with China. At first the Emperor issued a divination document, saying:—"Supernatural horses ought to come from the north-west. When we received the Woo-sun horses, these being an excellent breed, were called Celestial horses; but on receiving the Ta-wan blood-perspiring horses, the name of the Woo-sun horses was changed to Remote Western horses, and the Fergana horses were called Celestial horses." China then began to build the great wall from Ling-keu westward, and the region of Tsew-tseuen was first established, to promote intercourse with the north-western kingdoms.* Envoys were consequently again sent to Gan-seĭh, Yen-ts'ae, Le-keen, Teaou-che, and Shin-tŭh; and the Emperor conceived a partiality for the Ta-wan horses. Missions followed each other in quick succession; the larger numbering several hundred persons, and the smaller a hundred or more; and the gifts they bore were for the greater part the same as in the time of the Marquis of Po-wang. Afterwards when the custom became less of a novelty, the number of followers was gradually reduced. The greatest number of missions sent by China in one year was over ten, and the smallest number five or six. From distant countries, return missions were sent every eight or nine years, and from the nearer every few years. About this time, Yuĕ having been exterminated by China, the south-western barbarians, who were reached by way of Shuh, all became alarmed, and requested to have Imperial officers set over them. The regions of Tsang-ko, Yuĕ-suy, Yĭh-chow, Tsin-le, and Wăn-shan were then appointed, as the commencement of a conterminous chain, intended to extend onward to the Ta-hea. More than ten missions were then sent in a year from these first regions, but they were all again stopped by the Kwăn-ming, who killed the envoys and seized their presents. On this provocation, China sent troops to attack Kwăn-ming, when they decapitated several tens of thousands of the tribe. After this envoys were again sent, but to the end they never succeeded in opening up a passage. The details of these events are found in the "History of the South-Western Barbarians." When Chang Këĕn first opened up the road to foreign kingdoms, the officials were rewarded with honours and nobility, and there was a pressure of memorials to the throne, detailing the marvels of foreign countries, and speaking of the advantage of attaching them, and the danger of

leaving them unsubdued. When any one sought the office of envoy, the Emperor—in view of the extreme distance which rendered such enterprises undesired by most men—accepted the volunteer, and gave him a token to raise followers, without making particular inquiry as to whence he came. A large reserve was thus raised for the service. These were sent to extend the open communications, and in their journeys to and fro there was almost invariably a robbery of the presents, or some failure on the part of the envoy. In order to maintain the efficiency of the service, the Emperor immediately caused an investigation into such cases, and filled up the places of defaulters, while inducements were held out to offenders to redeem themselves by meritorious conduct. When the facts regarding the missions were inquired into, innumerable breaches of law were treated with leniency; and when any of the officials died, his place was immediately filled up. In estimating the status of foreign kingdoms, for those reputed great, the envoy had a token of credence, and to the lesser an assistant envoy was sent. Hence a rivalry arose among those reckless talkers who were mere ciphers in action, and the envoys, all usurping official prerogatives, disposed of the presents at their own option, wishing to make purchases on easy terms for their own personal advantage. The foreign nations also became disgusted with the Chinese envoys, whose reports were full of glaring discrepancies. In view of the great distance of the Chinese army, these foreigners, who judged themselves safe from invasion in that direction, forbade the supply of provisions, in order to distress the Chinese missions. The envoys, thus reduced to extremities, were exasperated into hostilities. The petty kingdoms of Low-lan and Koo-sze, which lay on the high road, wantonly attacked and robbed the envoy Wang K'wei and his company; and the Chinese were being constantly intercepted and attacked by picked Heung-noo troops. The envoys emulated each other in speaking of the advantage to be gained by the subjugation of these kingdoms, and the danger of leaving them unrestrained; adding that the troops stationed in the cities were weak, and might easily be defeated. The Emperor thereupon sent Seaou Po-noo, the Marquis of Tsung-peaou, to take command of the cavalry of the subject kingdoms, with the troops from the several regions, to the number of several tens of thousands, to attack the Heung-noo, but the latter made off.

Next year an attack was made, when the troops of Seaou Po-noo carried off the King of Low-lan. Guard-houses were planted at intervals, from Tsew-tseuen to the Yuh Gate. Ta-wan and the other countries sent envoys to accompany the Chinese missions back, that they might see for themselves the magnitude of the empire. On such an occasion they presented ostrich eggs and conjurers from Le-keen, with which the Emperor was greatly delighted. The Chinese envoy had been to the source of the Yellow river, where the mountains contain abundance of jade and other precious stones, some of which he had selected and brought with him. The Emperor consulted an ancient hydrography of famous rivers, from

which he found, that the mountains whence this river issued were called the Kwăn-lun range. About this time the monarch made several tours round the lakes, on which occasions he distributed money and silks, and made presents in generous profusion to the various parties from foreign kingdoms who were residing in the capital for a time, in order to show them the great wealth of China. The chief actor exhibited the wonders of his art in the choicest performances; and to the vast multitude of spectators assembled the Imperial hospitality was extended in pools of wine and forests of flesh meat, thus giving the foreign visitors to see the inexhaustible resources of the Imperial treasuries and stores, that so they might be duly impressed with the magnificence of the empire. When the feats of jugglery were added to the entertainment, the performance of the actors improved year by year, the great popularity of the fêtes dating from this period. The envoys from foreign countries continued to arrive without intermission. But the nations to the west of Ta-wan, all relying on their great distance, assumed a haughty and intractable bearing; and as they would not conform to the rites, they had to be submitted to restraint. Envoys were despatched from China with a vast retinue of followers; but the return envoys brought merely fair words to the Emperor. They reported that Ta-wan had excellent horses in the city of Urh-sze; but they refused to show them to the envoys. The Emperor, who was fond of the Ta-wan horses, heard this report with pleasure. He forthwith despatched the sturdy yeoman, Chay Ling, and others on a mission to the King of Ta-wan, with 1,000 ounces of gold, and a golden horse, to prefer a request for some of the famous horses in the city of Urh-sze. But Ta-wan already possessed a superabundance of Chinese objects, and the magnates consulting together, came to the following conclusion:—"China is at a great distance from our country, and travellers thence are frequently lost in the Salt Desert. If they leave by the northern route they are exposed to the Heung-noo raids; if they take the southern route they suffer for want of water and pasture, and at many parts of the road, where there are no settled inhabitants, great scarcity prevails. If the Chinese envoys come with a retinue of several hundred persons, more than half of them usually die of starvation on the way. How then can they possibly send an army? The Urh-sze horses are the most valuable horses in Ta-wan." Consequent on this, the demand of the Chinese envoy was met by an absolute refusal. The envoy was enraged, and gave way to unguarded utterances, hammered the golden horse into a shapeless mass, and left. The Ta-wan magnates became irritated, and said:—"The Chinese envoy has come to insult us." When they sent him away, orders were transmitted to the King of Yuh-ching on the eastern border, who intercepted and killed him, taking possession of his treasures. On hearing of this event, the Emperor was in a fury. Yaou Ting-han and the others who had been to Ta-wan, said the Ta-wan troops were feeble, and it would not require more than 3,000 able-bodied Chinese archers to subjugate the country. The Emperor had already sent the Marquis of

Chŭh-ya, with a force of 700 cavalry, to chastise Low-lan, and he having at once taken the king prisoner, the Emperor was the more disposed to listen to the suggestion of Yaou Ting-han. Wishing at the same time for an opportunity to confer honour on his favourite concubine Madam Le, he appointed her relative Le Kwang-le General, with a commission to chastise Ta-wan.

Chang Këën's grandson Măng, with the cognomen Tsze-yew, became distinguished for his abilities. In the reign of Yuen-te (B.C. 48–33) he was made Magnate of the Banqueting-house, and was sent on a mission to the Heung-noo. While holding the office of Secretary to the Censorate, he was calumniated by Shĭh-Heen, under the influence of which he committed suicide.

FEBRUARY 24TH, 1880.

E. BURNETT TYLOR, Esq., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks ordered to be returned to the respective donors:

FOR THE LIBRARY.

From the EDITOR.—Correspondenz-Blatt, December, 1879; January, 1880.

From the SOCIETY.—Achtzehnter Bericht der Oberhessischen Gesellschaft für Natur-und Heilkunde, November, 1879.

From Lieut. R. C. TEMPLE.—The Lord's Prayer in the South Andaman Language. By E. H. Man.

From the AUTHOR.—Notes on the Transliteration of the Burmese Alphabet. By Lieut. R. C. Temple.

From the AUTHOR.—The Lokanîti translated from the Burmese paraphrase. By Lieut. R. C. Temple.

From the AUTHOR.—Rough Notes on the Distribution of the Afghan Tribes about Kandahar. By Lieut. R. C. Temple.

From the AUTHOR.—Notes on the formation of the country from Kala Abdullah Khan in the Khójak Pass to Lugárí Bárkhán. By Lieut R. C. Temple.

From the EDITOR.—"Nature," Nos. 537–538.

From the EDITOR.—"Revue Scientifique," Nos. 33–34.

From the SOCIETY.—Journal of the Society of Arts, Nos. 1421–1422.

From the SOCIETY.—Transactions of the Imperial Society of Naturalists, Moscow, Tom. XXXIII, liv. 1; Tom. XXXIV,

liv. 1; Tom. XXXV, pt. 1, liv. 2; Tom. XXXV, pt. 2, liv. 1-6; Tom. XXXVI, liv. 1, 2; Tom. XXXVIII, liv. 1.

From Professor AGASSIZ.—Bulletin of the Museum of Comparative Zoology, Harvard College, Vol. VI, Nos. 1 and 2.

From the INSTITUTION.—Journal of the Royal United Service Institution, Vol. XXIII, No. 103.

From the EDITOR.—Revue Internationale des Sciences, No. 2, 1879.

From the COLLEGE.—List of the Fellows, &c., of the Royal College of Physicians, 1880.

From the SOCIETY.—Proceedings of the Royal Society, No. 200.

From the SOCIETY.—Transactions of the Geological Society of Glasgow, Vol. VI, pt. 1.

From the SOCIETY.—Proceedings of the Asiatic Society of Bengal, No. IX, 1879.

From the SOCIETY.—Journal and Proceedings of the Royal Society of New South Wales, 1878.

JOHN HALL GLADSTONE, Esq., F.R.S., was elected a member of the Institute.

Dr. DALLY exhibited a collection of Ethnological objects from British Columbia.

The following paper was read by the Author:—

On the ORIGIN *of the* PLOUGH, *and* WHEEL-CARRIAGE.

By E. B. TYLOR, Esq., F.R.S., President.

THOUGH much has been written on that great engine of civilisation, the plough, yet the whole line of evidence as to its development from the simplest and earliest agricultural implements seems never to have been put together, so that I venture to lay before the Anthropological Institute the present notes.

Not only the beginning of agriculture, but the invention of the plough itself, are pre-historic. The plough was known to the ancient Egyptians and Babylonians, and the very existence of these nations points to previous thousands of years of agricultural life, which alone could have produced such dense, settled, and civilised populations. It was with a sense of what the plough had done for them, that the old Egyptians ascribed its invention to Osiris, and the Vedic bards said the Açvins taught its use to Manu, the first man. Many nations have glorified the plough in legend and religion, perhaps never more poetically than where the Hindus celebrate *Sîtâ*, the spouse of Râma, rising brown and beauteous, crowned with corn-ears, from

the ploughed field; she is herself the furrow (*sîtâ*) personified. Between man's first rude husbandry, and this advanced state of tillage, lies the long interval which must be filled in by other than historical evidence. What has first to be looked for is hardly the actual invention of planting, which might seem obvious even to rude tribes who never practise it. Every savage is a practical botanist skilled in the localities and seasons of all useful plants, so that he can scarcely be ignorant that seeds or roots, if put into proper places in the ground, will grow. When low tribes are found not tilling the soil but living on wild food, as apparently all mankind once did, the reason of the absence of agriculture would seem to be not mere ignorance, but insecurity, roving life, unsuitable climate, want of proper plants, and in regions where wild fruits are plentiful, sheer idleness and carelessness. On looking into the condition of any known savage tribes, Australians, Andamaners, Botocudos, Fuegians, Esquimaux, there is always one or more of these reasons to account for want of tillage. The turning-point in the history of agriculture seems to be not the first thought of planting, but the practical beginning by a tribe settled in one spot to assist nature by planting a patch of ground round their huts. Not even a new implement is needed. Wandering tribes already carry a stick for digging roots and unearthing burrowing animals, such as the *katta* of the Australians, with its point hardened in the fire (Fig. 1), or the double-ended stick which Dobrizhoffer ("Abipones," part ii, chap. 13) mentions as carried by the Abipone women to dig up eatable roots, knock down fruits or dry branches for fuel, and even, if need were, break an enemy's head with. The stick which dug up wild roots passes to the kindred use of planting, and may be reckoned as the primitive agricultural implement. It is interesting to notice how the Hottentots in their husbandry break up the ground with the same stone-weighted stick they use so skilfully in root-digging or unearthing animals. (J. G. Wood, "Natural History of Man," vol. i, p. 254). The simple pointed stake is often mentioned as the implement of barbaric husbandry, as when the Kurubars of South India are described as with a sharp stick digging up spots of ground in the skirts of the forest, and sowing them with ragy (Buchanan, "Journey through Mysore, etc.," in Pinkerton, vol. viii, p. 707); or where it is mentioned that the Bodo and Dhimal of North-East India, while working the ground with iron bills and hoes, use a 4-ft. two-pointed wooden staff for a dibble (B. H. Hodgson, "Aborigines of India," p. 181). The spade, which is hardly to be reckoned among primitive agricultural implements, may be considered as improved from the digging-stick by giving it a flat paddle-like

end, or arming it with a broad pointed metal blade, and afterwards providing a foot-step (*see* the Roman spade in Smith's "Dictionary of Greek and Roman Antiquities," s.v. "pala.") In the Hebrides is to be seen a curious implement called *caschrom*, a kind of heavy bent spade with an iron-shod point, which has been set down as a sort of original plough (Rau, "Geschichte des Pflugs," p. 16; Macculloch, "Western Islands," Pl. 30); but its action is that of a spade, and it seems out of the line of development of the plough. To trace this, we have to pass from the digging-stick to the hoe.

All implements of the nature of hoes seem derived from the pick or axe. Thus the New Caledonians are said to use their wooden picks both as a weapon and for tilling the ground. (Klemm, "Culturwissenschaft," part ii, p. 78). The *tima* or Maori hoe (Fig. 2), from R. Taylor's, "New Zealand and its Inhabitants," p. 423, is a remarkable curved wooden implement in one piece. It is curious that of all this class of agricultural implements, the rudest should make its appearance in Europe. Tradition in South Sweden points to waste pieces of once tilled land in the forests and wilds, as having been the fields of the old "hackers," and within a generation there was still to be seen in use on forest farms the "hack" itself (Fig. 3), made of a stake of spruce-fir, with at the lower end a stout projecting branch cut short and pointed (Hyltén-Cavallius, "Wärend och Wirdarne," part ii, p. 110; i, p. 43). Even among native tribes of America a more artificial hoe than this was found in use. Thus the hoe used by the North American women in preparing the soil for planting maize after the old stalks had been burnt is described as a bent piece of wood, three fingers wide, fixed to a long handle. (*See* Charlevoix, "Nouvelle France," Letter 23; Lafitau, "Mœurs des Sauvages Ameriquains," vol. ii, p. 76, and Plate 7). (I do not venture to copy the hoe shown in this plate: a mere fancy picture.) In other North American tribes, the women hoed with a shoulderblade of an elk or buffalo, or a piece of the shell of a tortoise fixed to a straight handle. (*See* Loskiel, "Mission of the United Brethren in North America," p. 66; Catlin, "American Indians," vol. i, p. 121). From this stage we come up to implements with metal blades, such as the Kafir axe, which by turning the blade in the handle becomes an implement for hoeing (Lane Fox, "Lectures on Primitive Warfare," No. 2, p. 10). The heavy-bladed Indian hoe (Sanskrit *kuddála*) called *koddály* in Malabar (Klemm, "Culturwissenschaft," part ii, p. 123), which is shown here (Fig. 4), is one example of the iron-bladed hoe, of clumsy and ancient type. The modern varieties of the hoe need no detailed description here.

FIG. 1.

FIG. 2.

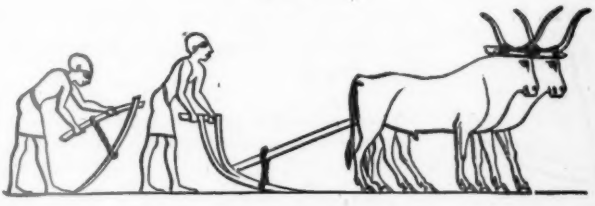
FIG. 3.

FIG. 4.

Fig. 1, Australian "Katta." Fig. 2, "Tima," or Maori Hoe.
Fig. 3, Swedish "Hack." Fig. 4, Indian Hoe.

That the primitive plough was a hoe dragged through the ground to form a continuous furrow, is seen from the very structure of early ploughs, and was accepted as obvious by Ginzrot ("Wagen und Fahrwerke der Griechen und Römer," vol. i, and Klemm, "Culturwissenschaft," part ii, p. 78). The evidence of the transitions through which agricultural implements have passed in Sweden during the last ten centuries or so, which was unknown to these writers, is strongly confirmatory of the same view. It appears that the fir-tree hack (Fig. 3) was followed by a heavier wooden implement of similar shape, which was dragged by hand, making small furrows; this "furrow-crook" is still used for sowing. Afterwards was introduced the "plough-crook," made in two pieces, the share with the handle, and the pole for drawing. The share was afterwards shod with a three-cornered iron bill, but the implement was long drawn by hand, till eventually it came to be drawn by mares or cows. (Hyltén-Cavallius, part ii, p. 111.) Thus in comparatively modern times a transformation took place in Sweden remarkably resembling that of which we have circumstantial evidence as having happened in ancient Egypt. The Egyptian monuments show a plough, which was practically a great hoe, being dragged by a rope by men. (*See* Denon, "Antiquités de l'Egypte," vol. i, Pl. 68.) Still more perfect is the ploughing scene here copied in Fig. 5. (*See* Rosellini, "Monu-

Fig. 5.



menti dell' Egitto, Pl. 32-3; Wilkinson, "Ancient Egyptians," chap. 6.) Here the man who follows the plough to break up the clods is working with the ordinary Egyptian hoe, remarkable for its curved wooden blade longer than the handle, and prevented from coming abroad by the cord attaching the blade to the handle half-way down. This peculiar implement, with its cord to hold it together, reappears on a larger scale in the plough itself, where the straight stick is lengthened to form the pole by which the oxen draw it, and a pair of handles are added by which the ploughman keeps down and guides the plough.

The Valley of the Nile, where the lightness and richness of the alluvial soil is favoured by the inundations with their fresh deposit of river mud, was no doubt one of the regions where the higher agriculture earliest arose, and looking at this sketch of hoeing and ploughing, we might be tempted to think that here the transition from the barbaric hoe to the civilised plough is to be seen as it first took place in the world. Egypt may possibly have been the birthplace of the plough, but so many forms of rude ploughs are to be found represented on coins and sculptures of the ancient world, that it is safer to be content with the general idea that they are enlarged and transformed hoes, without attempting to fix the date, place, and nation, to which this inventive transformation belongs. The following figures are selected from those copied by Ginzrot and Rau. The old Syracusan form (Fig. 6), as likewise some old Etruscan patterns, are remarkable as being so close to the original hoe-pattern as not to have the tail or handle. This want is supplied in other rude forms of ancient Italy, of which Fig. 7 shows one. A more angular Roman form is thought to represent the ceremonial plough, with which the wall-line was traced in founding a new city, and Fig. 8 is another archaic form; the projection of the pole behind was for the ploughman's foot to press the share down.

FIG. 6.

FIG. 7.

FIG. 8.

Depresso incipiat jam tum mihi taurus aratro
Ingemere, et sulco attritus splendescere vomer.
(Virg. Georg. I, 45.)

Fig. 9 is Greek, from an early MS. of Hesiod's "Works and Days." Looking at forms of plough as rude as these to be seen at this day in Asia and in backward countries of Europe, one wonders to find that already in classic ages the husbandman had ploughs of construction far more nearly approaching that of our best modern implement-makers. Pliny (xviii, c. 48), after describing the simpler kinds of plough, mentions that in Rhœtia, a plough with the addition of two

FIG. 9.

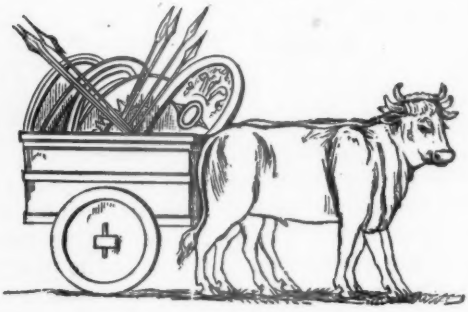
small wheels had been recently invented, and was used for land already under tillage. He also mentions the coulter (*culter*). This knife, fixed in front to make the first cut ready for the share to turn the sod, is a great improvement on the primitive ploughs, where the ploughshare has to do the whole work. In Pliny's time, though only forming part of some ploughs, it was evidently well-known. Thus he recognises the whole construction of the wheel-plough (Fig. 10) as figured by Caylus from an ancient gem. The ordinary modern plough used by the English farmer improves upon this rather in details of construction and material than in essential principle, though a new start in invention is taken by the self-acting plough which no longer needs the ploughman to follow at the plough-tail, and by the steam-plough which substitutes engine-traction.

FIG. 10.

The plough, drawn by oxen or horses, and provided with wheels, has taken on itself the accessories of a wheel-carriage. But when the plough is traced back to its earliest form of a hoe dragged by men, its nature has little in common with that of the vehicle. Though the origin of the wheel-carriage is even more totally lost in pre-historic antiquity than that of the plough, there seems nothing to object to the ordinary theoretical explanation (*see* Reuleaux, "Kinematics of Machinery," and others), that the first vehicle was a sledge dragged along the ground, that when heavy masses had to be moved, rollers were put under the sledge, and that these rollers passed into wheels forming part of the carriage itself. The steps of such a transition, with one notable exception which will be noticed, are to be actually found. The sledge was known in ancient Egypt (*see* the well-known painting from El Bersheh of a colossal statue being dragged by men with ropes on a sledge along a greased way, Wilkinson, "Ancient Egyptians," vol. iii.) On mountain-roads, as in Switzerland, as well as on the snow in winter, the sledge remains an important practical vehicle. The use of rollers under the sledge was also familiar to the ancients (*see* the equally well-known Assyrian sculpture of the moving of the winged bull, in Layard's "Nineveh and Babylon," p. 110.) If now the middle part of the trunk of a tree used as a roller were cut down to a mere axle, the two ends remaining as solid drums, and stops were fixed under the sledge to prevent the axle from running away, the result would be the rudest imaginable cart. I am not aware that this can be traced any-

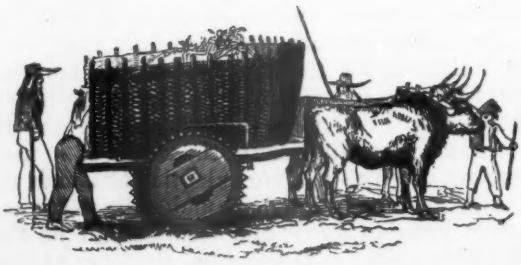
where in actual existence, either in ancient or modern times; if found, it would be of much interest as vouching for this particular stage of invention of the wheel-carriage. But the stage which would be theoretically the next improvement, is to be traced in practical use; this is to saw two broad drums off a tree-trunk, and connect them by a stout bar through their

FIG. 11.



centres, pinned fast, so that the whole turns as a single roller. The solid drum-wheel was used in the farm-carts of classic times (*see* the article "Plaustrum," by Yates, in Smith's "Dictionary of Greek and Roman Antiquities"). The ox-wagon here shown is taken from the Antonine column (Fig. 11); it appears to have solid wheels, and the square end of the axle proves that it and its drum-wheels turned round together in one. A further improvement was to make the wheel with several pieces nailed together, which would be less liable to split. The ancient Roman farm-carts were mostly made with such wheels, as are their successors which are used to this day with wonderfully little change, as in Greece and Portugal. The bullock-cart of the Azores (Fig. 12) (from Bullar, "Winter in the Azores," vol. i.,

FIG. 12.



p. 121) is a striking relic from the classic world; its wheels are studded with huge iron nails by way of tire. From old times it was common to make wooden rings, sockets, or bearings underneath the cart for the axle to turn in, much as children's toy-carts are made, as has often been remarked. But a drawing of a modern bullock-cart taken near Lisbon, represents only a pair of pieces of wood acting as stops, so that the body of the cart can be lifted off its wheels. In looking at these clumsy vehicles we certainly seem to have primitive forms before us. There is, however, the counter-argument which ought not to be overlooked, and which in some measure accounts for the lasting-on of these rude carts, namely, that for heavy carting across rough ground they are convenient, as well as cheap and easily repaired. Considering that the railway-carriage builder gives up the coach-wheel principle, and returns to the primitive construction of the pair of wheels fixed to the axle turning in bearings, we see that our ordinary carriage-wheels turning independently on their axles are best suited to comparatively narrow wheels, and to smooth ground or made roads. Here they give greater lightness and speed, and especially have the advantage of easily changing direction and turning, which in the old block-wheel cart can only be done by gradually slewing round in a wide circuit.

As early as history goes back, the carriage-builder had already begun to make spoked-wheels with metal tires, whose well-made nave turned smoothly on the axle. It is needless here to extract from Wilkinson and Layard particulars of the beautifully-made Egyptian and Assyrian chariots, nor to go into details of classic, mediæval, and modern carriage-building. As bearing on the origin of the art, it must be noticed that the point where the developments of the plough and carriage join, is in the way of attaching the drawing oxen or horses, which was much alike in both. The pole and yoke was no doubt the original mode of draught, not only for the plough and the heavy ox-cart, where it may be often seen still, but also for the chariot and light car. (*See* "Schlieben, Die Pferde des Alterthums," p. 154.) The war-chariot, with its yoked steeds, has a remarkable similarity wherever we meet with it in the ancient world, which seems to point to its invention by some one particular nation, though which has not yet been made out, whence it spread to distant countries. How such inventions found their way is well shown in a point of detail, which incidentally shows how far the ancient Britons were from the uncivilised state popularly attributed to them, namely, their use (Mela iii, 6) of scythe-chariots, such as were used in Oriental armies, like that of Darius (Diod. Sic. xvii, 53), or of Antiochus Eupator, when

he came into Judea with horsemen and elephants, and 300 scythe-chariots (2 Maccab. xiii, 2). War-chariots were from the first drawn by the pole. The Homeric chariots appear to have been without traces, as where in the Iliad (vi, 40), Adrastus' scared horses snap the pole amid the tangled tamarisk, and set off straight for the city, evidently having nothing but the pole to hold them. In ancient Egypt, one inner trace was used, but the stress was on the pole. Eventually, in looking at the harness of various nations, we come to the present plan of draught by collar and traces. The change is interesting, as seeming to prove that the earliest use of draught-cattle is that still seen in the yoke of oxen. It has been argued by Pictet ("Origines Indo-Européennes, part ii, p. 94)), that the yoke, Sanskrit *yuga* = that which *joins*, was first invented for the pair of oxen to draw the plough with, it being likely that they were first put to this heavy work, and afterwards used for drawing carts, rather than that the idea of drawing a cart by oxen should have occurred before putting them to plough. This, though not absolutely certain, seems a very reasonable argument, while the yoke and pole being so much better suited to the ox than to the horse, points to oxen as the earliest draught-beasts. The history of successive changes seems well shown in the Latin *jumentum*, a beast of burden, from *jugumentum* = yoke-ment, which word keeps up the memory of the original yoke, though other modes of transporting burdens had come in. The Latin *jumentum* is used for the horse, etc., but not for the ox, and French *jument* has still further lost the old idea, now meaning merely a mare. One further remark is suggested by the harness of the ancient Egyptian chariot, where the yoke is provided with two saddles coming down on the withers of the horses. As is well known, cavalry was by no means general among the armies of the ancient world. The early Aryans, like the Homeric heroes, were charioteers, not horsemen, nor are there any ancient Egyptian horsemen to be seen on the monuments. On the other hand, the warriors of Palestine are there to be seen on horseback, and horse-soldiers appear on the Assyrian sculptures. In old times, however, the horseman is mostly seen riding a bare-backed horse, or with a cloth or pad only. It seems to have been gradually that saddles proper began to be used in Assyria, and among the Greeks and Romans. Looking now at the Egyptian yoke-saddles of the chariots, one may suspect that from them were derived not only the harness-saddles in modern use, but also our riding-saddles.

Discussion.

Mr. Dickins remarked that the Chinese language—that great repository of ancient facts—corroborated the President's observations upon the hardened stick as the earliest instrument of tillage. The Chinese character, *lei*, for spade, to dig, etc., consisted of the character for tree or wood, combined with an abbreviation of a character meaning easy, the whole being simply a piece of wood, perhaps a mere branch, shaped so as to be easily used for turning up the ground. This was developed, by having a broad and flattened end, into a sort of wooden spade, the blade of which was afterwards made of metal. The Chinese plough seemed to be derived from this spade, rather than from any kind of hoe. The character for plough, *li*, consisted of the character for "ox," surmounted by an abbreviation of a sign meaning "black"—the black ox being the most prominent object on the cultivated plain—thence we may suppose that in China the plough was always worked by an ox, not by human agency. The plough did not appear to be much used in husbandry in China, where spade and hoe cultivation predominated. The same was the case in Japan; where, indeed, Mr. Dickins did not remember ever to have seen a plough at work. The Japanese name for plough, *kara-suki*, meant a Chinese (*kara*) spade or digger (*suki*). With respect to wheeled vehicles, he (Mr. Dickins) had seen Chinese pictures representing the drum-wheel or mere disc of wood, which was sometimes perforated with holes, round or otherwise shaped, arranged symmetrically, no doubt to lighten the wheel. This perhaps was a link between the drum-form and the wheel of the present day. While on this subject, Mr. Dickins begged to call attention to two most extraordinary modes of vehicular locomotion common in the Far East: the wheelbarrows in North China, adapted for the muddy paths with raised narrow stone causeway in the middle, and the jinrikshas of Japan. The word "jinriksha" was not Japanese, but Chinese, meaning man-power vehicle. Up to about ten years ago they were unknown in Japan, kagos and norimons alone being used on journeys of any length. The jinriksha was like a hansom cab with the top removed; in the shafts was not a horse, but a man, who could drag his fare along at an average rate on good ground of about 5 miles an hour, and as much as 30 miles without change of coolie. These vehicles were, it is said, invented by an American Missionary in Japan; they are hung upon springs, and are probably not a Japanese invention. The extraordinary thing about them was the marvellous rapidity with which they superseded kagos, which in a few years had almost disappeared from the country. In Yedo there were over 20,000 of these strange vehicles plying for hire. There they fulfilled the office of our cabs. The quickness with which they were adopted showed the imitative faculty of the Japanese; while the fact that for so many hundred years they had remained without them, betrayed their want of inventive power—

the more so, in that a sort of cart drawn by men and capable of holding several passengers had been in use for many years, centuries probably, on some parts of the Tôkaidô. Mr. Dickins referred to the Chinese Book of Nature ("San-tsai-t'u) and the Japanese "Wakansansai dzu-ye" (founded on the first-named work), with the "Kin-mô-dzu-i" ("Illustrated Instructor of Youth").

Mr. W. G. Smith remarked that very ancient agricultural implements were, in all probability, mounted with stone. He said he had found it by no means uncommon whilst going over ancient British positions, to find large pieces of worked flint, differing materially in shape from axe and adze forms. The former large pieces were, he said, generally somewhat rude, and might be looked upon as the mounting-pieces of ancient hoes or even ploughshares. Mr. Smith exhibited a large flint implement from his collection, worked to a hoe or ploughshare form.

March 9th, 1880.

Francis Galton, Esq., F.R.S., *Vice-President, in the Chair.*

The minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

For the Library.

From the Editor.—"Nature," Nos. 539, 540.
From the Editor.—"Revue Scientifique," Nos. 35, 36, 37.
From the Editor.—"The Athenæum," Part 626.
From the Editor.—Correspondenz-Blatt, February, 1880.
From the Editor.—Matériaux pour l'histoire de l'homme, Tom. X, 1879.
From the Society.—Journal of the Society of Antiquaries, Vol. VIII, No. 1.
From the Society.—Journal of the Society of Arts, Nos. 1423–1424.
From the Society.—Proceedings of the Royal Geographical Society, Vol. II, No. 3.
From the Berlin Anthropological Society.—Zeitschrift für Ethnologie, 1879, Heft 3–5.
From the Academie Royale des Sciences a Amsterdam.—Verslagen en Mededselingen, Afd. Natuurk, 2e Rks. Dl. XIV.
Jaarboek, 1878.
Processen-Verbaal, 1878–9.
From E. W. Brabrook, Esq.—"Was Adam the first Man created?" By Argus.

From the AUTHOR.—Dolmens in Japan. By Edward S. Morse.
From the AUTHOR.—Description of Human Remains found near Donnybrook, Co. Dublin. By W. Frazer, F.R.C.S.I., M.R.I.A.

Mr. GILL exhibited a number of photographs of Australian Aborigines.

The following paper was read by the author:—

VISUALISED NUMERALS. By FRANCIS GALTON, F.R.S.

I PROPOSE to describe a peculiar habit of mind which characterises, so far as I can judge, about one man in 30, and one woman in 15; but before doing so, I must say a word of warning against a too-frequent tendency to assume that the minds of every other sane and healthy person must be like one's own. The psychologist should inquire into the minds of others as he should into those of animals of different races, and be prepared to find instances of much to which his own experience can afford little, if any, clue.

This is especially the case with psychologists who are not *imaginative* in the strict but unusual sense of that ambiguous word. I do not by imagination mean an uncontrolled fancy and inaccurate recollection. I apply the word imaginative to those who while they may be exceedingly matter-of-fact and precise, are apt to think in visual images; not in fancied words, nor in a more abstract manner. The mental state of imaginative persons is amidst a series of pictures, vivid in colour, and well defined in form, and it happens in many cases that what they mentally see appears external to themselves. There is no doubt that abstract thought is best carried on without the aid of this concrete imagery, and that a natural tendency to indulge in it is liable to be repressed by vigorous brain-workers. It is consequently uncommon among those scientific men whose attention I chiefly desire to gain. Every one, however, recognises the fact that some men of the highest order of genius and artistic temperament have had the gift of vivid mental presentation in a remarkable degree; they also know that chess-players exist, who have no mean capacity in other respects, who can play 10 or more games blindfold, having all the time a perfectly vivid picture of each board in succession before them, and seeing the chessmen on each, as made of wood or ivory, as the case may be. I therefore ask you all to take for granted the existence of imaginative persons, in the sense of the word in which I have used it, although many of yourselves may never have had the tendency to think in visual forms, or if you once had it, may have long since abandoned it.

Let me also remark, that if the existence of colour-blindness which affects about 1 man in 30 was unsuspected, or at all events wholly undescribed and unnamed, until the time of Dalton, it need not astonish us that the psychological peculiarity which I am about to describe, and which is about equally rare (at least in adults), should hitherto have escaped notice.

Persons who are imaginative almost invariably think of *numerals* in visual imagery. If the idea of *six* occurs to them, the word "six," does not sound in their mental ear, but the figure 6 in a written or printed form rises before their mental eye. The clearness of the images of numerals, and the number of them that can be mentally viewed at the same time, differs greatly in different persons. The most common case is to see only two or three figures at once, and in a position too vague to admit of definition. There are a few persons in whom the visualising faculty is so low that they can mentally see neither numerals nor anything else; and again there are a few in whom it is so high as almost to give rise to hallucinations. The images of these persons, whether of numerals or not, are so vivid as to be undistinguishable from reality, except by the aid of accidental circumstances; thus the images may be transparent, or apt to vary in brightness from moment to moment, and to change more or less in outline. They may appear in the air without support, or any other of the innumerable conditions of objective reality may be absent, the want of which will render the visionary character of the image immediately manifest to a sane mind. Those who are able to visualise a numeral with a distinctness comparable to reality, and to behold it as if it were before their eyes, and not in some sort of dreamland, will define the direction in which it seems to lie, and the distance at which it appears to be. If they were looking at a ship on the horizon at the moment that the figure 6 happened to present itself to their minds, they could say whether the image lay to the left or right of the ship, and whether it was above or below the line of the horizon; they could always point to a definite spot in space, and say with more or less precision that that was the direction in which the image of the figure they were thinking of first appeared.

Now the strange psychological fact to which I desire to draw attention is that among persons who visualise figures clearly, there are many who notice that the image of the same figure invariably makes its first appearance in the same direction, and at the same distance. Such a person would always see the figure when it first appeared to him at (we may suppose) one point of the compass to the left of the ship at which he was looking, and upon the line of the horizon, and at 20 feet distance. Similarly,

we may suppose that he would see the figure 7 invariably half a point to the left of the ship and at an altitude equal to the sun's diameter above the horizon, and at 30 feet distance; similarly for all the other figures. Consequently, when he thinks of the series of numerals 1, 2, 3, 4, &c., they show themselves in a definite pattern that always occupies an identical position in respect to the direction in which he is looking.

Those who do not see figures with the same objectivity, use nevertheless the same expressions with reference to their *mental* field of view. They can draw what they see in a manner fairly satisfactory to themselves, but they cannot locate it in reference to their axis of sight and to the horizontal plane that passes through it. It is with them as it is with all of us in dreams, the imagery is before and around, but our eyes during sleep are turned inwards and upwards.

The pattern or "Form" in which the numerals are seen is by no means the same in different persons, but assumes the most grotesque variety of shapes. I have placed on the table or suspended against the walls copies of nearly sixty of them, which will be seen to run in all sorts of angles, bends, curves and zigzags. They have however for the most part certain characteristics in common. They are stated in all cases to have been in existence, at least so far as the earlier numbers in the Form are concerned, as long back as the memory extends; they come into view quite independently of the will, and their shape and position, at all events in the *mental* field of view, is nearly invariable. They have other points in common to which I shall shortly draw attention, but first I will endeavour to remove all shadow of doubt as to the authenticity of these statements.

I see no "Form" myself, and first ascertained that such a thing existed through a letter from Mr. Bidder, in which he described his own case as a very curious peculiarity. I was at the time making inquiries about the strength of the visualising faculty in different persons, and among the numerous replies that reached me I soon collected ten or twelve other cases in which the writers spoke of their seeing numerals in definite forms and in much the same terms that Mr. Bidder had used. Though the information came from independent sources, the expressions used were so closely alike that they strongly corroborated one another. Of course I eagerly followed up the inquiry, and when I had collected enough material to justify publication, I wrote an account which appeared in "Nature" on January 15th, with several illustrations. This has led to a wide correspondence and to a much increased store of information, which enables me to arrive at the conclusions I shall lay before you. The answers I received whenever I have pushed my questions have been

straightforward and precise. I have not unfrequently procured a second sketch of the Form and found it to agree closely with the first one. I have also questioned many of my own friends in general terms as to whether they visualise numbers in any particular way. The large majority are unable to do so. But every now and then I meet with persons who possess the faculty, and I have become familiar with the quick look of intelligence with which they receive my question. It is as though some chord had been struck which had not been struck before, and the verbal answers they give me are precisely of the same type as those written ones of which I have now so many. I cannot doubt of the authenticity of independent statements which closely confirm one another, nor of the general accuracy of the accompanying sketches, because I find now that my collection is large enough for classification, that they tend to form a continuous series. I am often told that the peculiarity is common to the speaker and to some near relative, and that they had found such to be the case by accident. I have the strongest evidence of its hereditary character after allowing, and over allowing, for all conceivable influences of education and family tradition.

Last of all, I have taken advantage of the opportunity afforded by a meeting of this Society, to bring with me many gentlemen well known in the scientific world, who have this habit of seeing numerals in Forms, and whose diagrams are in the collection before you. Amongst them are Mr. G. Bidder, Q.C., the Rev. Mr. G. Henslow, the botanist, Mr. Schuster, F.R.S., the physicist, Mr. Roget, Mr. Woodd Smith, and Colonel Yule, C.B., the geographer. I wish that some of my foreign correspondents could also have been present, such as M. Antoine d'Abbadie the well-known French traveller and Membre de l'Institut, and Baron v. Osten Sacken, the Russian diplomatist and entomologist, for they have given and procured me much information.

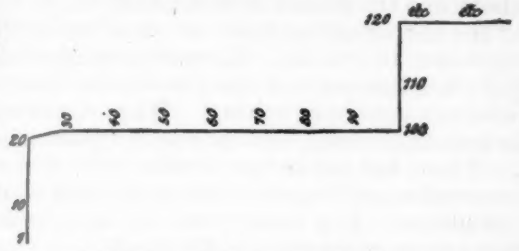
I feel sure that I have now said enough to authenticate my data; it remains to treat them in the same way as any other scientific facts and to extract as much meaning from them as possible.

To repeat in part what has already been said, this peculiarity is found so far as my observations have extended, in about 1 out of every 30 adult males or 15 females. It consists in the sudden and automatic appearance of a vivid and invariable "Form" in the mental field of view, whenever a numeral is thought of, and in which each numeral has its own definite place. This Form may consist of a mere line of any shape, of a peculiarly arranged row or rows of figures, or of a shaded space.

I give woodcuts of some of these forms, and very brief descriptions of them extracted from the letters of my correspon-

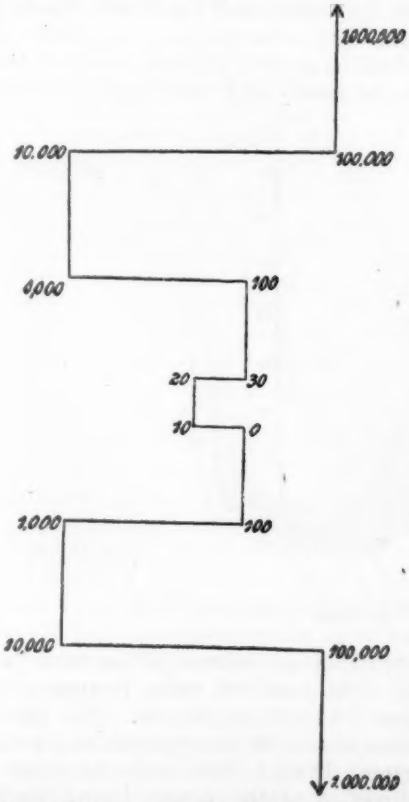
dents. (The woodcuts have already appeared in "Nature."* Many other drawings on a smaller scale on two lithographed plates will be found at the end of these pages, and brief descrip-

J.S.



tions of some of them are given partly in an appendix, and partly by the sides of the figures themselves.)

I.J.C.



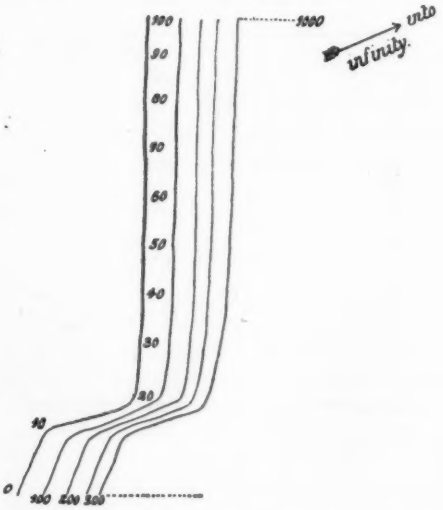
* I am indebted to the courtesy of the publishers of "Nature" for the use of these woodcuts.

I.S. "The figures are about a quarter of an inch in length, and in ordinary type. They are black on a white ground. 200 generally take the place of 100 and obliterate it. There is no light or shade, and the picture is invariable."

I.J.C. "The accompanying figure lies in a vertical plane, and is the picture seen in counting. The zero point never moves, it is *in* my mind; it is that point of space known as "here," while all other points are outside or "there." When I was a child the zero point began the curve; now it is a fixed point in an infinite circle . . . I have had the curious bending from 0 to 30 as long as I can remember, and imagine each bend must mark a stage in early calculation. It is absent from the negative side of the scale, which has been added since childhood."

T.M. "The representation I carry in my mind of the numerical series is quite distinct to me, so much so that I cannot think of any number but I at once see it (as it were) in its peculiar place in the diagram. My remembrance of dates is also nearly entirely dependent on a clear mental vision of their *loci* in the diagram. This, as nearly as I can draw it, is the following:—

T.M.

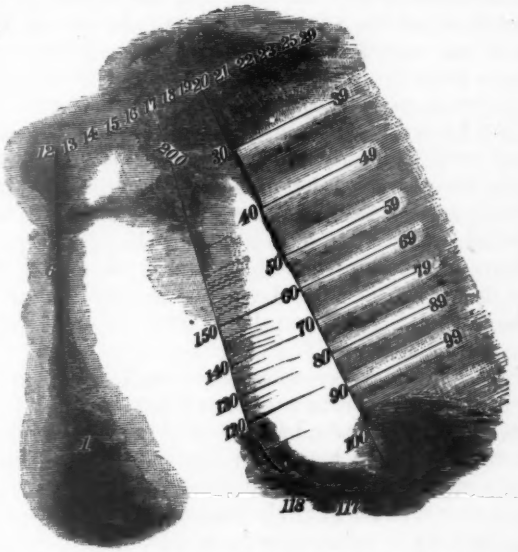


It is only approximately correct (if the term "correct" be at all applicable). The numbers seem to approach more closely as I ascend from 10 to 20, 30, 40, &c. The lines embracing a hundred numbers also seem to approach as I go on to 400, 500, to 1,000. Beyond 1,000 I have only the sense of an infinite line in the direction of the arrow, losing itself in darkness towards the millions. Any special number of thousands returns

in my mind to its position in the parallel lines from 1 to 1,000. The diagram was present in my mind from early childhood; I remember that I learnt the multiplication table by reference to it at the age of seven or eight. I need hardly say that the impression is not that of perfectly straight lines; I have therefore used no ruler in drawing it."

D.A. "From the very first I have seen numerals up to nearly 200 range themselves always in a particular manner, and in thinking of a number it always takes its place in the figure. The more attention I give to the properties of numbers and their interpretations, the less I am troubled with this clumsy framework for them, but it is indelible in my mind's eye even when for a long time less consciously so. The higher numbers are to me quite abstract and unconnected with a shape. This rough and untidy production is the best I can do towards representing what I see. There was a little difficulty in the performance, because it is only

D.A.



by catching oneself at unawares, so to speak, that one is quite sure that what one sees is not affected by temporary imagination. But it does not seem much like, chiefly because the mental picture never seems *on* the flat but *in* a thick, dark grey atmosphere deepening in certain parts, especially where 1 emerges, and about 20. How I get from 100 to 120 I hardly know, though if I could require these figures a few times without thinking of them on purpose, I should soon notice. About 200 I lose all framework. I do not see the actual figures very distinctly, but what

there is of them is distinguished from the dark by a thin whitish tracing. It is the place they take and the shape they make collectively which is invariable. Nothing more definitely takes its place than a person's age. The person is usually there so long as his age is in mind."

[The engraver took much pains to interpret the meaning of the rather faint but carefully made drawing, by strengthening some of the shades. The result was very satisfactory, judging from the author's own view of it, which is as follows:—"Certainly if the engraver has been as successful with all the other representations as with that of my shape and its accompaniments, your article must be entirely correct."]

In some cases the mental eye has to travel along the faintly-marked and blank paths of a form, to the place where the numeral that is wanted is known to reside, and then the figure starts into sight. In other cases all the numerals as far as 100 or more, are faintly seen at once, but the figure that is wanted grows more vivid than its neighbours; in one of the cases it rises as if an unseen hand had lifted it. There are as many varieties as there are persons, but I will not now describe their shapes in detail, partly because I want to draw attention to the points they have in common, and principally because I hope that some of the forms will be explained by the persons themselves who see them. I have, however, written at the side of each of the pictures that are suspended against the walls, those details which are required to explain their individual peculiarities.

It is beyond dispute that these forms originate at an early age, though they are so far developed in boyhood and youth as to include the higher numbers, and, among mathematical students, the negative values.

Nearly all of my correspondents speak with confidence of their forms having been in existence as far back as they recollect. One states that he knows he possessed it at the age of four; another, that he learnt his multiplication table by the aid of the elaborate mental diagram he still uses. Not one in ten is able to suggest any clue as to their origin. They cannot be due to anything written or printed, because they do not simulate what is found in ordinary writings or books.

The figures run frequently to the left, and more often upwards than downwards. They do not even lie in the same plane. Sometimes a form has twists as well as bends, sometimes it is turned upside down, sometimes it plunges into an abyss of immeasurable depth, or it rises and disappears in the sky. In one case it proceeds at first straightforward, then it makes a backward sweep high above head, and finally recurves into the pocket, of all places! It is often sloped upwards at a slight

inclination from a little below the level of the eye, just as objects on a table would appear to a child whose chin was barely above it.

All this contrasts strongly with the character of the Forms under which historical dates are visualised by the same persons. These are sometimes copied from the numerical ones, but they are more commonly based both clearly and consciously on the diagrams used in the school-room.

The same may be said of the imaged letters of the alphabet; therefore the numerical Form is the oldest of all. I suppose that it first came into existence when the child was learning to count, and was used by him as a natural mnemonic diagram, to which he referred the spoken words "one," "two," "three," &c. Also, that as soon as he began to read figures, their visual symbols supplanted the verbal sounds, and permanently established themselves on the Form.

Hence the Form is of an older date than that at which the child began to learn to read; it represents his mental processes at a time of which no other record remains. It persists in vigorous activity, and offers itself freely to our examination.

The teachers of some schools have kindly questioned their pupils for me, and I find that the proportion of young people who see numerals in Forms is much greater than that of adults. But for the most part their forms are neither well defined nor complicated. I conclude that when they are too faint to be of service they are gradually neglected, and become wholly forgotten, while if they are vivid and useful they increase in vividness and definition by the effect of habitual use. Hence, in adults, the two classes of seers and non-seers are rather sharply defined, the connecting link of intermediate cases which is observable in childhood having disappeared.

These Forms are the most remarkable existing instances of what is called "topical" memory, the essence of which appears to lie in the establishment of a more exact system of division of labour in the different parts of the brain than is usually carried on. Topical aids to memory are of the greatest service to many persons, and teachers of mnemonics make large use of them, as by advising a speaker to mentally associate the corners, &c., of a room with the chief divisions of the speech he is about to deliver. Those who feel the advantage of these aids most strongly are the most likely to cultivate the use of numerical forms.

The question remains, why do the lines of the Forms run in such strange and peculiar ways? the reply is, that different persons have natural fancies for different lines and curves. Their handwriting shows this, for handwriting is by no means

solely dependent on the balance of the muscles of the hand, causing such and such strokes to be made with greater facility than others. Handwriting is greatly modified by the fashion of the time. It is in reality a compromise between what the writer most likes to produce, and what he can produce with the greatest ease to himself. I am sure, too, that I can trace a connection between the general look of the handwritings of my various correspondents and the lines of their Forms. If a spider were to visualise numerals, we might expect he would do so in some web-shaped fashion, and a bee in hexagons. The definite domestic architecture of all animals as seen in their nests and holes, shows the universal tendency of each species to work according to definite lines. The same is seen in the groups and formations of flocks of gregarious animals, and in the wedge-shaped or other flights of gregarious birds.

The rambling character of the lines that characterise the majority of the Forms are natural to the taste of a child. They may be recognised in their drawings, in the castles they construct on the sand, and in the outlines of the borders of their flower-gardens. The appreciation of firm curves can hardly co-exist with the imperfectly developed physique of the child; it is related to the accurate hand, the steady tread, and the generally well-adjusted muscles of manhood. A natural instinct in favour of those rigidly straight lines in which printed matter is disposed in schedules, or of the circular outlines of many diagrams, can hardly as yet have become frequent in our race. No savage possesses it. Our habitual use of the straight line and circle has grown up as it were yesterday, under the requirements of manufactures based on careful measurements with a rule, and carried out by the plane and the turning lathe, which instruments make it now much more easy to work in accordance with these lines than any other. The rambling numerical Forms being based on the instinctive preferences of childhood, show the solidity of their foundation by persisting in defiance of subsequently acquired tastes.

Children learn their figures to some extent by those on the clock. I cannot, however, trace the influence of the clock on the numerical Forms in more than three cases out of all my collection, which amounts to nearly 80 pictures of one kind or another. In one of them, the clock-face actually appears; in another it has evidently had a strong influence; and in the third, its influence is indicated, but nothing more. I suppose the Roman numerals in the clock do not fit in sufficiently well with ideas based upon the Arabic ones.

The paramount influence proceeds from the names of the numerals. Our nomenclature is perfectly barbarous, and that of other civilised nations is not better than ours and frequently

worse, as the French "quatre-vingt dix-huit." We speak of ten, eleven, twelve, thirteen, etc., in defiance of the beautiful system of decimal notation in which we write those numbers. What we see is one-nought, one-one, one-two, etc., and we should pronounce on that principle, with this proviso, that the word for the one having to show both the place and the value, should have a sound suggestive of "one" but not identical with it. Let us suppose it to be the letter *o* pronounced short as in "on," then instead of ten, eleven, twelve, thirteen, etc., we might say *on-one, on-two, on-three*, etc.

The conflict between the two systems creates a perplexity, to which conclusive testimony is borne by these numerical forms. In almost all of them there is a marked hitch at the 12, and this repeats itself at the 120. The run of the lines between 1 and 20 is rarely analogous to that between 20 and 100, where it usually first becomes regular. The teens frequently occupy a larger space than their due. It is not easy to define in words the variety of traces of the difficulty and annoyance caused by our unscientific nomenclature that are portrayed vividly, and so to speak painfully, in these pictures. They testify by the evidence of indelible scars to the effort and ingenuity with which a sort of compromise is struggled for and has finally been effected between the verbal and decimal systems. I am sure that this difficulty is more serious and abiding than has been suspected, not only from the persistency of these twists which would have long since been smoothed away if they did not continue to subserve some useful purpose, but from the results of experiments on my own mind. I find I can deal mentally with simple sums with much less strain if I audibly conceive the figures as one-nought, one-one, etc., and I can both dictate and write from dictation with much less trouble when that system or some similar one is adopted. I have little doubt that our nomenclature is a serious though unsuspected hindrance to the ready adoption by the public of a decimal system of weights and measures.

These Forms are no doubt of some convenience for mnemonic purposes, and it is worth considering what shape is most likely to suit the majority of those who wish for the first time to make one for their use. It ought of course to be based on the decimal system, and judging from the majority of the Forms it need not go higher than 100. I am sure that symmetrical divisions at each ten would be too elaborate and uniform for general convenience, and that a system of scores and half scores would be the best. In short a pentagon, with a mark in the middle of each side, seems most likely to fulfil the conditions; it certainly suits me well. In that figure the angle at the bottom would stand indifferently for 0 or 100, and the other angles for 20, 40, 60,

and 80; the place of 50 being in the middle of the horizontal top line. I find that my own mind has a decided left-handed twist, so that I cannot without an effort reckon the divisions in this imaginary pentagon in the direction in which the hands of a clock would move, but I must proceed reverse ways.

This concludes what I desired to say, and I trust that the gentlemen whose names I have mentioned will kindly explain their own Forms and favour us with any remarks that may help to throw light on this curious subject. The lithographed page with 8 drawings contains copies of their Forms (made by a camera lucida) from those they were so good as to send me, and the following are brief explanatory extracts from their letters. The other lithograph contains 24 forms of other persons; they will sufficiently explain themselves.

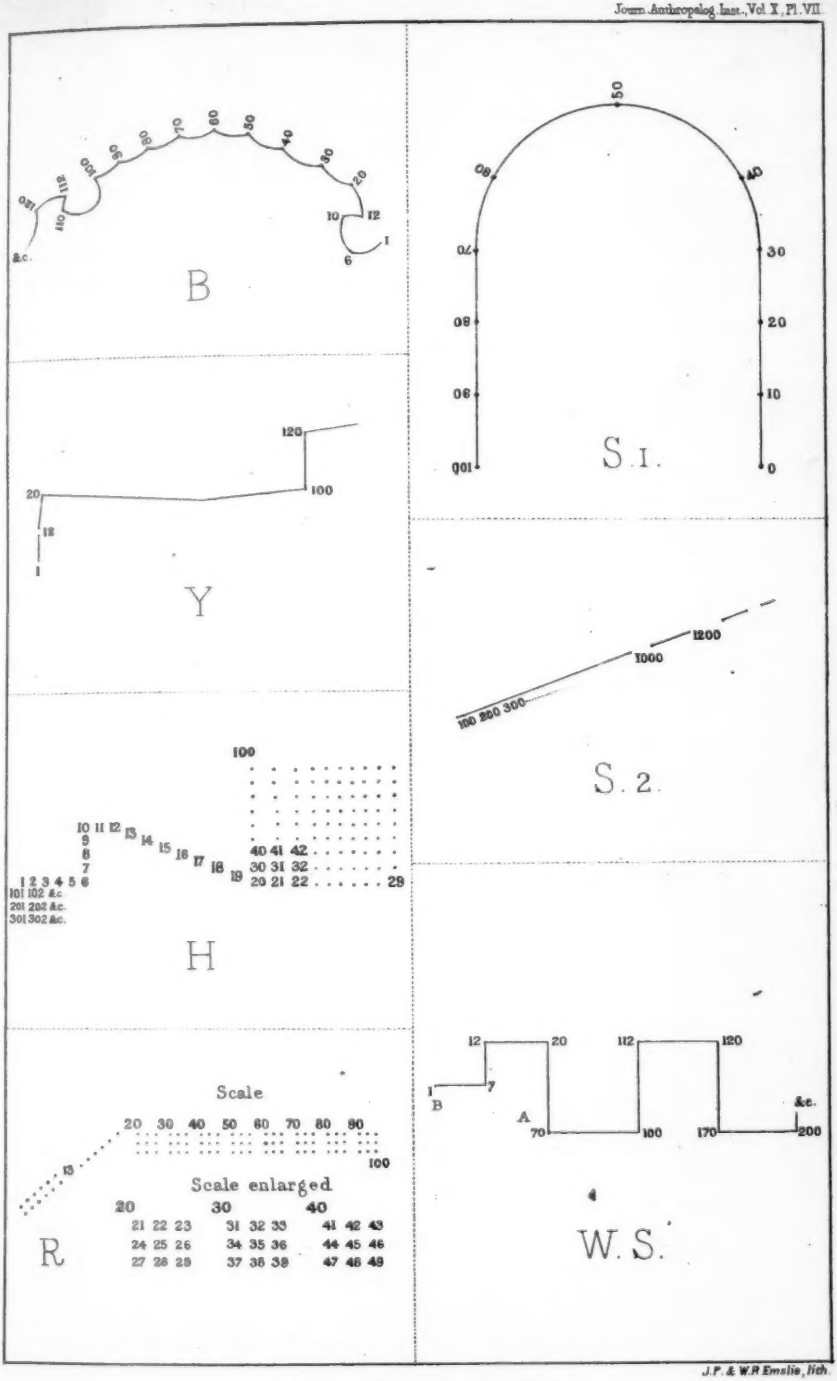
APPENDIX.

Brief Extracts from a few letters, with illustrations. (*See Plate* VII.) (*The letter accompanying each illustration is the initial of the Correspondent.*)

George Bidder, Q.C.—One of the most curious peculiarities in my own case is the arrangement of the arithmetical numerals. I have sketched this to the best of my ability; every number (at least within the first thousand, and afterwards thousands take the place of units) is always thought of by me in its own definite place in the series, where it has, if I may say so, a home and an individuality. I should, however, qualify this by saying that when I am multiplying together two large numbers, my mind is engrossed in the operation, and the idea of locality in the series for the moment sinks out of prominence. You will observe that the first part of the diagram roughly follows the arrangement of figures on a clock-face, and I am inclined to think that may have been in part the unconscious source of it, but I have always been utterly at a loss to account for the abrupt change at 10 and again at 12.

Colonel Yule, C.B.—I am not sure that the angle at 20 is a right angle, nor the line from 20 to 100 straight. Neither do I (or *did* I is perhaps more correct) see them in type, or black on white ground. I used to see them in gradations of colour, but I cannot fix these now with truth. I can only remember that 30 and up to 40 were of a subdued sunny colour; a division of the shade took place at 12.

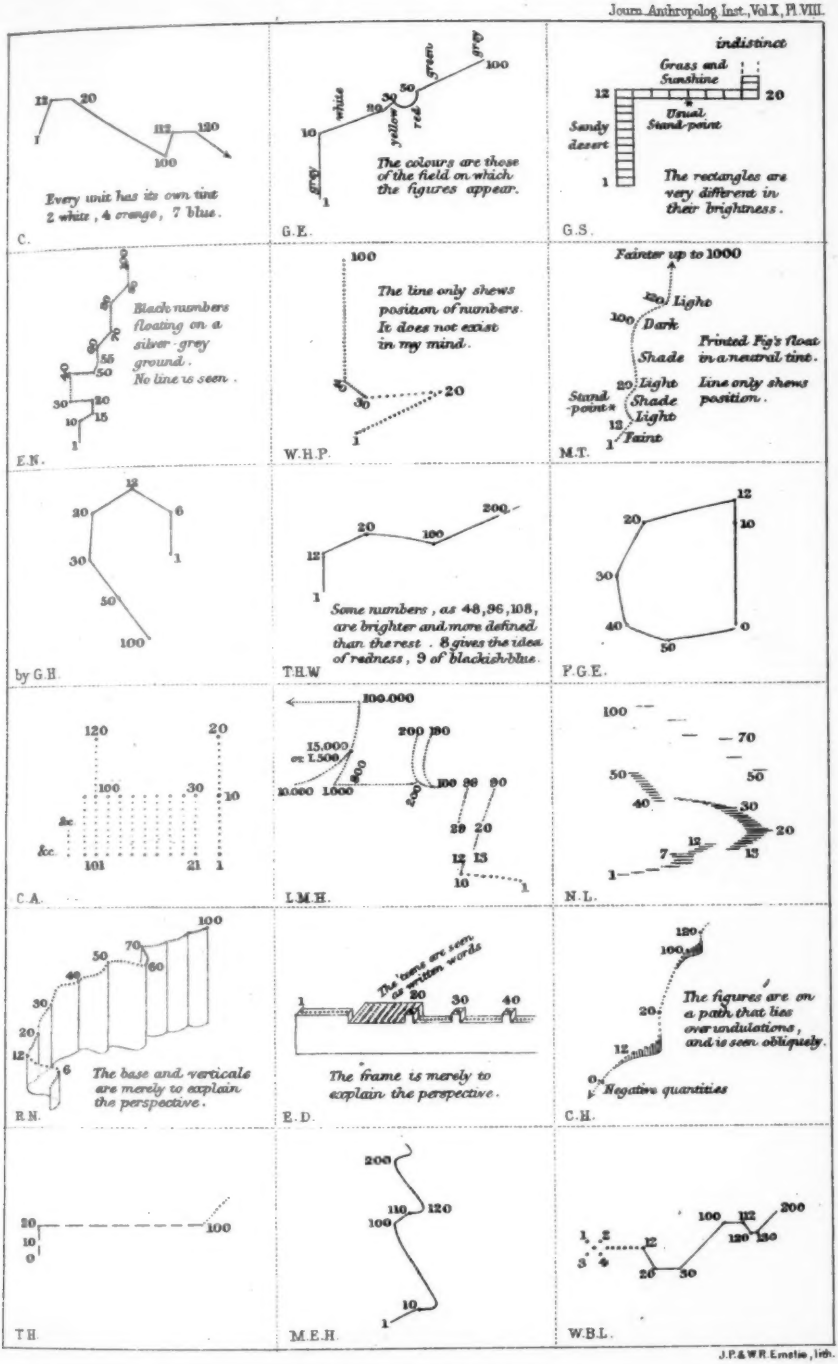
The Rev. G. Henslow.—I have always associated my numbers from childhood upwards as in the accompanying arrangement, but am quite at a loss to know how it arose. My alphabet corresponds with it.



J.P. & W.R. Emslie, lith.

VISUALISED NUMERALS

BY FRANCIS GALTON, F.R.S.



J.P.& W.R. Emslie, lith.

VISUALISED NUMERALS,

by Francis Galton, F.R.S.

ARTHUR SCHUSTER, F.R.S.—The first figure shows the appearance the diagram 0-100 would have if looked at perpendicularly. It recedes from the eye with a slight upward slope of about 1 in 12. I make extensive use of this diagram; it seems to me to act as a shelf on which I can put any number and take it out again when required. There is, however, a good deal of elasticity in this (as well as in the second figure), when I am specially occupied with one part of it, say between 70 and 80, as in thinking over what has happened in the last 10 years, that part would seem to become larger and encroach on the territory of its neighbours. On certain occasions also, the diagram would become distorted so as to join the 100 to the 0.

This is not the only figure on which I visualise numbers; the hundreds seem to me to be arranged as in the second figure, in a line sloping upwards. Between 1200 and 1500 the diagram becomes confused; above 1500 I cannot visualise numbers. I have almost daily to deal with such up to four or five figures, but they are only figures to me; I cannot represent them in a diagram.

JOHN ROGET.—The first twelve are clearly derived from the spots on dominoes. After 100 there is nothing clear but 108 (*i.e.* 9×12), and then I begin with the units and tens only as above.

B. WOODD SMITH.—In my case the numerals follow the route shown in the accompanying figure. Above 200 it becomes vague and is soon lost, except that 999 is always in a corner like 99. The lines bear no reasonable proportion to the numbers they contain, my own position in regard to them is generally at A, nearly opposite my own age, 50, and has shifted as I have grown older, but it sometimes varies between A and B. When at B I always stand with 1-7 to my left, but when at A I can face either towards 7-12 or towards 12-20, or 20-70, but never (I think) with my back to 12-20.

DISCUSSION.

GEORGE BIDDER, Esq., observed that he had possessed the faculty of mental visualisation referred to in the paper so long as he could remember. He imagined the mental pictures to be survivals of some early association of childhood, which however, in most cases, it is impossible to trace. In the mental picture or diagram that numerals appear to him to assume, the first twelve numbers are placed as if on a clock face, and probably the idea was originally derived from that source. In his diagram there was an angle at 10, and again at 12. He could only account for this by supposing it to be the result of a struggle between the decimal and duodecimal systems of notation. He explained also that not only numbers, but almost all subjects of thought and memory, present themselves to his mind in a visualised form:—For example, the months of the year are arranged in a circle. The days of the week in a line from right to left. The dates and events of history have also a

definite local arrangement. As regards the latter, he believed that he could identify part of it with the arrangement in a certain historical puzzle-map, which he once, as a child, possessed.

He pointed out in connection with the subject, the curious value of *memoria technica* in assisting the memory, which usually consists of the arbitrary association of the fact to be remembered, with some totally incongruous, and perhaps ludicrous topic, and that apparently the very incongruity is an aid to memory; he also explained that the visualised pictures were not in his case to be confounded with impressions real or false of the organs of external sense, and did not seem to rank with them at all.

Dr. Hack Tuke: With reference to a question just put by Major-General Lane Fox, as to "Whether the cause of the difference between different people in the power to visualise mental impressions depends upon the perfection of the organs of sight?" I see no reason to suppose such to be the case. I have no doubt the optic nerve is as well developed and the sight as good in those who are destitute of this power as in the 1 in 30 who possess it. Dr. Ferrier and others believe they have made out the visual centre in the grey matter of the cerebral convolutions; and it is probably here that this remarkable power resides. It is not in the peripheral expansion of the optic nerve. If we could examine—I hope it may be long hence—the grey matter of the visual centre of Mr. Bidder and others who have given us their experience to-night, we ought to find under the microscope a greater perfection of structure than in that of ordinary people. If our knowledge were sufficiently advanced, we ought to discover cells exquisitely adapted to their purpose; cells possessing a receptive and retentive power in a superlative degree. This visualising of forms might be called a faculty of physiological hallucination, as distinguished from what I am more familiar with—pathological hallucination. I have paid some attention to this among the insane, and have observed marked differences among them on careful inquiry into their sensations, although at first sight they seemed identical. Thus, with auditory hallucinations, I find that when a man hears an imaginary voice he sometimes hears it as clearly as he hears my own; while in other cases it is only heard internally. It is an inward voice. Corresponding conditions, I suspect, occur with those who visualise figures. In some, there is a distinct objective form; in others, the internal representation, however vivid, does not reach the point of objectivity. It would take too long to go into the physiological causes of these differences. There is no doubt that the researches of Mr. Galton in regard to these remarkable mental representations, which are consistent with perfect health, present great interest to those who study the hallucinations which result from disease. In both instances they are alike purely subjective in their nature.

Mr. Schuster: The diagram of numerals which I see, has roughly the shape of a horse-shoe, lying on a slightly inclined plane, with the open end towards me. It always first comes into

view, in front of me, a little to the left, so that the right-hand branch of the horseshoe, at the bottom of which I place 0, is in front of my left eye. The numbers then succeed each other, going upwards and to the left; 50 is placed at the highest point. When I move my eyes without moving my head, the diagram remains fixed in space, and does not follow the movement of my eye. When I move the head, the diagram unconsciously follows the movement, but I can, by an effort, have it fixed in space as before. I can also shift it from one part of the field of view to the other, and even turn it upside down. I use the diagram as a resting-place for the memory, placing a number on it, and finding it again when wanted. A remarkable property of the diagram is a sort of elasticity which enables me to join the two open ends of the horse-shoe together when I want to connect 100 with 0. The same elasticity causes me to see that part of the diagram on which I fix my attention larger than the rest.

I also have a diagram on which I place the months of the year. The diagram is an oval curve. The months follow each other in the direction of motion of the hands of a watch. The summer months take up a much larger space than the winter months.

I see the days of the week arranged in a straight line from right to left.

Although both the numerals and the days of the week succeed each other from right to left, I am not left-handed.

Mr. A. Tylor: Mr. Bidder in his remarkable and most valuable account of the workings of his own mind, and of the hereditary power which he possesses of visualising, has stated: First, that the face of the clock itself (but with the figures XI and XII deficient) from which as a child he had learnt to tell the time, recurs to his mind when he visualises. Second, that the picture of a certain number of the kings of England following William the Conqueror, appears still in his mind in the same row that he first saw them in the child's pictorial history book from which he learnt their names, dates, and order. From the statement made by Mr. Galton on the authority of most of the visualists, the impressions of this kind made in childhood are the most permanent, brightest, and clearest. The events happening since childhood are more difficult to visualise than the earlier periods of history.

This statement refers us to the importance of object lessons for children, the Kindergarten system, and explains why children should be taught by objects. A block, with three dimensions, faced with a picture of an object used to illustrate a letter or word, seem to enable any child to visualise and make the first great abstract step in education.

I may mention my own experience on a subject not touched on by Mr. Galton, viz.: the manner of learning to distinguish the right hand from the left.

I found that difficult, and when a young child invented for myself a plan of overcoming that difficulty; I pictured, or as it will now be called (after the valuable discovery of Mr. Galton),

visualised myself always in the same position in the same room riding on a rocking-horse, with a whip in my right hand; as I knew that the hand with the whip must be always between the horse and the wall, I could determine which was my right hand in whatever position I actually was, by placing myself visually in the proper position on the horse. No doubt most children do something of this kind in learning lessons, music, or ciphering.

Had I known how to interpret what had happened to myself and to Mr. Galton's other observers—when I read before the Institute my paper on the "Object-Origin of Pre-historic Thoughts and Ideas,"* I should have strengthened my argument on Thought. Mr. Galton's researches extend the principle I thus advocated very much. I believe now that the only thoughts that young children can attain to have a distinct object-origin, and on this point children resemble the whole animal world. Not only has Mr. Galton's inquiry a local value, but his investigation will probably affect the theory of the working of the human mind, and have an important application on other questions of biology.

Mr. ROGET, on being called upon, stated that the form which the numbers from 1 to 100 instinctively assumed in his imagination, did not seem to exhibit any remarkable peculiarities as compared with those of other persons who saw such forms. It was, however, so deeply engraven in his mind, that a strong effort of the will was required to substitute for it any artificial arrangement. This he had found to be the case in the endeavour to fix dates in his memory. He had, in childhood, been trained by his father (the late Dr. Roget) to the use of a well-known system of *memoria technica* advocated by Feinaigle, in which each year has its special place on the walls of a particular room, and the rooms of a house represent successive centuries. This plan his father had made great use of, and it had always served the speaker well for the chronology of earlier ages; but for that in which we live, particularly for events during his own life, he had, in spite of various attempts, never succeeded in fairly locating the dates in the room assigned to them. They *would* go to what seemed to be their natural homes in the arrangement above referred to, which had come to him from some other, probably prior, but unknown source. The numbers from 1 to 12, taken separately, usually appeared to him in symmetrical forms, chiefly learnt, he had little doubt, from the spots on dominoes.

Mr. RICHARD B. MARTIN: I should like to ask Mr. Galton if he has observed the singular power which is the subject of his paper to exist in any particular class of persons, or to be associated with any special pursuits, artistic, mathematical, or otherwise.

The Rev. G. HENSLOW described his own scheme of visualised numerals, which, like several others, had an angular bend at 10, and another at 12. The figures 1–6 being horizontal, figure 6 was in the usual point of sight, 7 to 10 being vertically arranged. The

* "Journal of the Anthropological Institute," vol. vi, p. 125.

whole range from 1 to 100 (101 recommencing at 1) was in sight at once, and any figure could be observed in its normal place; but if the head was turned, the whole scheme moved accordingly. By an effort of the will, if the eyes were *alone* turned and not the head, the scheme could be shifted also, so that the figure 6 would still retain its position in the line of sight.

His mental alphabet was described as partially coloured; several of the letters being the initial letters of colours, partake of the same hues. Thus, B, G, R, P, are blue, green, red, purple, respectively. I is black, being the initial letter of Ink, while C and O are white, apparently due to the white space included within the circle of black; that others are coloured, such as A being yellow, and several grey. He could not account for these facts.

Mr. Henslow also described his experience of *Visual Objects.* On shutting the eyes and waiting for a minute or so, some object, real or nondescript, is sure to appear. Something in its form appears to be suggestive of some other object, into which it spontaneously turns, the latter resolving itself into a third, and so on till the series vanishes. The visual objects are thus purely automatic creations of the brain. Sometimes an object will appear which had been previously seen, but entirely forgotten, showing that unconscious or automatic memory was at work. The objects often seen are elaborately cut glass bowls, etc., highly ornamental; embossed, chased or frosted or filagreed gold and silver ornaments, flower-stands, etc., of exquisite beauty; as well as common objects, fruit, flowers, jugs, sofas, etc. Brilliant and elaborate patterns of textile fabrics are not unfrequent. Choice bits of scenery, such as a narrow gorge, covered with ferns and mosses, with cascades, etc., or again, well-remembered scenes of childhood, will spontaneously appear.

If an attempt be made to foist some object into the dioramic series, a great effort of the will is required. The first attempt may either fail entirely or some nondescript hybrid structure, part automatic and part volitional, will appear. By a continued and determined effort to see the object thought of, the will or volitional effort may overcome the automatic action of the brain, so that the object determined upon will at last appear distinct and sharply defined.

Every object is generally very distinct, though if of some length, the whole of it cannot always be seen at once, thus the stock of a gun was only visible, not the barrel. They are at focal distance, excepting scenery, which appears as in nature. The objects are of small size, 1 to 2 or 3 inches in diameter or length.

Several water-colour illustrations of visual objects were exhibited by Mr. Henslow.

Colonel Yule, C.B.: I am afraid my experiences in this way are less striking and vivid than those described by the gentlemen who have spoken. The diagram representing the form in which I see the series of numbers is on the wall, and will be seen to be of a very simple kind compared with theirs. With me, too, the impressions have become sensibly weaker of late years, and in describing them

it is not always quite easy to say how far I am speaking from surviving impressions, and how far from memories of the past. I must say, too, that I have found that under the effort to fix and describe these impressions in writing for Mr. Galton, they have become, as it were, thinner, and hard to catch; and in this experience I do not stand alone.

Though I could respond to much that was said of their own impressions by Mr. Bidder and Mr. Henslow, there is one point in which their experiences raise in me strong dissent. They actually describe not only the procession of numbers as seen by them, but that of the days of the week and the months of the year as advancing from *right to left!* Now, so strong with me is the opposite impression that their description seems to me quite anomalous, and in fact if I said all I felt I should say—"Why, everybody *knows* that they go the other way."

I may mention that the procession of numbers as I see them, rising vertically from 1 to 20, and from 20 going off to the right in a tolerably straight line up to 100, applies strictly also to my retrospect of the history of the centuries. Every event in the first 20 years of a century (*e.g.*, the Union with Scotland, the Rebellion of 1715 in the last century; or the Regency, the battle of Waterloo, etc., in the present century) I see as in the vertical part of the series, every event in the remaining decades of the century falls into the horizontal procession.

Colonel Yule then spoke of the form and different colours of the days of the week as they appeared to him; and in conclusion said that in being called up to speak on this subject, he could not but feel a good deal like M. Jourdain, who was so astonished at learning that he had been speaking prose for 40 years without knowing it. So he (the speaker) had been *visualising* for a good deal more than 40 years, and but for their friend Mr. Galton he should never have become aware of the fact.

MARCH 23RD, 1880.

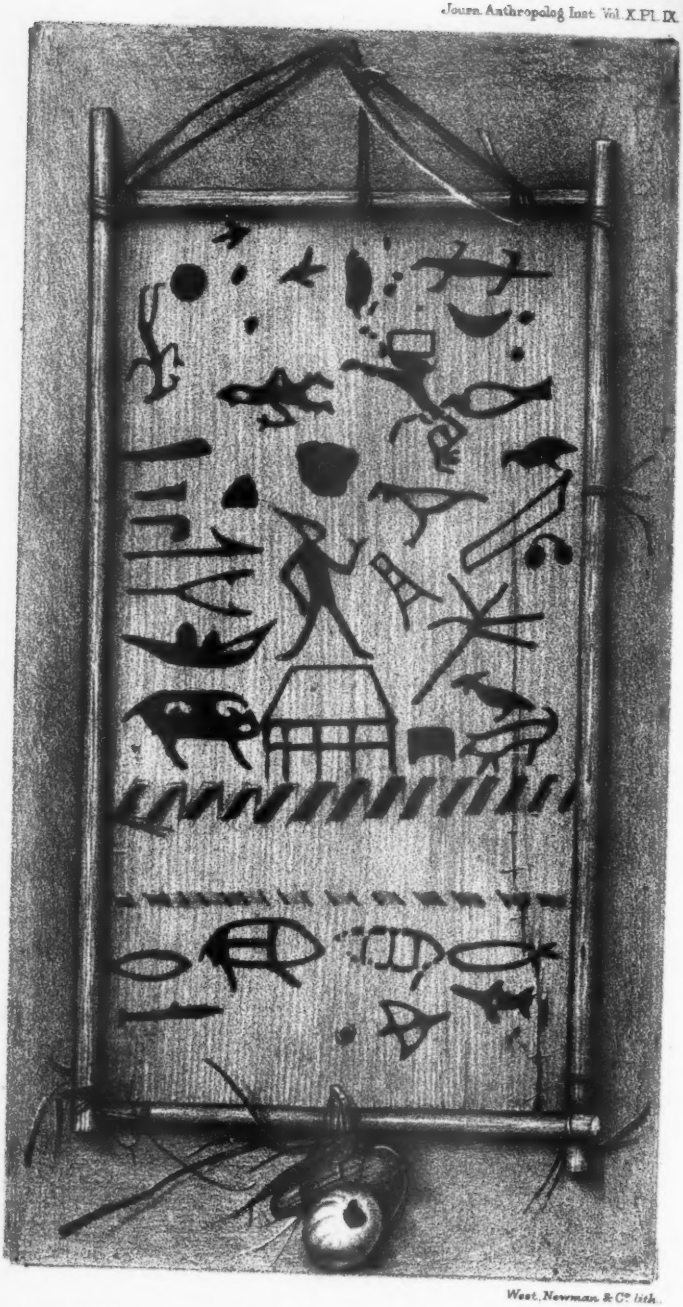
E. BURNETT TYLOR, Esq., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following list of presents were announced, and thanks were ordered to be returned to the respective donors:—

FOR THE LIBRARY.

From MAGYAR TUDOMÁNYOS AKADÉMIA Á BUDA-PEST.—Almanach, 1879-80; Értesitő (Akadémiai) 1878, 1-7; Értesitő (Archæo-



West, Newman & Co. lith.

Nicobarese Picture Writing.

logiai) 1878, XII; Évkönyvek (Annales), XVI, 2-5; Értekezések a társad. tudományok köréből. V. 1-8; Értekezések a történelmi tudományok köréből, VII, 5-10, VIII, 1-9; Értekezések a mathem. tudományok köréből, VI, 3-9, VII, 1, 2, 4, 5; Ertekezések a természet-tudományok köréből, VIII, 3-15, IX, 1-19; Közlemények (Math. és Term.) XIV, XV; Monumenta Hungariæ Historica. I. osztály. Diplomataria, XVI; Történelmi Tár. XXV; Archivum Rákóczianum. I. osztály. VI, VII; Liter. Berichte aus Ungarn. 1878, 1-4, 1879, 1-4; Monum. Archæol. III, 2, IV, 1.

From the Editor.—"Nature," Nos. 541, 542.

From the Editor.—Revue Internationale des Sciences, No. 3, 1880.

From the Editor.—Revue Scientifique, No. 38.

From the Editor.—Correspondenz-Blatt, No. 3, 1880.

From the Society.—Journal of the Society of Arts, Nos. 1425, 1426.

From the Society.—Proceedings of the Society of Antiquaries of Scotland. Vol. XII, pt. 2. Vol. I, new series.

From the Society.—Mittheilungen der Anthrop., Gesell. in Wien. Band. IX, Nos. 9, 10.

From the Government.—Statistics of the Colony of New Zealand, 1878.

From the Author.—Archæological Notes on Ancient Sculpturings on Rocks in Kumaon, India; Prehistoric Remains in Central India; Rough Notes on the Snake Symbol in India, in connection with the Worship of Siva; Description of some Stone Carvings collected in a Tour through the Doab, from Cawnpore to Mainpuri. By J. H. Rivett-Carnac, Esq., C.S., C.I.E.

From the Author.—Introduction to the Study of Sign Language. By Garrick Mallery, Esq.

From the Author.—"Turtle-back" Celts in the District of Columbia.

Report on a Chaco Cranium. By W. J. Hoffman, M.D.

The following paper was read:—

On Nicobarese Ideographs. By V. Ball, M.A., F.G.S.

Mr. Galton's abstract of M. von M. Maclay's Notes* on the Papuans of Maclay Coast, New Guinea, has recalled to my memory an intention formed long ago of bringing before the notice of the members of the Anthropological Institute, an account of certain *ideographs* or picture writings which are commonly to be met with in the houses of the inhabitants of the

* Published in "Nature," vol. xxi, p. 227.

Nicobar Islands. What I have to say on the subject is not precisely new, since a paper by me, describing and figuring the example, of which I herewith forward a photograph, was published in the Bombay "Indian Antiquary," for 1875. However, since the facts have never been laid before a critical audience, I venture to hope that this communication may not prove unacceptable to the members of the Institute.

As the Andamanese may be said to have not progressed in civilisation beyond that stage which was represented by the people of the early stone periods of Europe, so the Nicobarese, who are much less savage and degraded than their neighbours of the Andamans, may justly be compared with the inhabitants of Europe in the "Bronze period,"* their villages erected on posts below high-water mark, alone serving to suggest a comparison with the lake-dwellings of Switzerland and other countries.

The example of Nicobarese picture writing, which I shall now describe,† was obtained by me in the year 1873, on the island of Kondul, where I found it hanging in the house of a man who was said to have died a short time previously. Before removing it I obtained the consent of some of the villagers, who seemed amused at my wishing for it. The offer of sundry bottles of rum, some cigars, and rupees, enabled me to obtain a goodly number of images, weapons, utensils, etc., but I do not purpose to allude to these more than thus incidentally at present.

While fully recognising the possibility of this painted screen not being intended to be more than an ornamental object, as the wooden images of men which are commonly to be seen in Nicobarese houses are believed to be, there are several features about it which lead me to the conclusion that it is really a record of some event.

The material of which it is made is, I believe, either the *glume* of a bamboo, or the *spathe* of a palm which has been flattened out and framed with split bamboos.

It is about 3 feet long, by 18 inches broad. The objects are painted with vermilion, their outlines being surrounded with punctures, which allow the light to pass through. Suspended from the frame are some young cocoanuts and fragments of dried hogsflesh.

As in all such Nicobarese paintings, which I have either seen or heard of, figures of the sun, moon, and stars occupy prominent positions. Now the sun and moon are stated by those who have known the Nicobarese best to be especial objects of adoration,

* I obtained a Nicobarese spear-head when in the island which was made of copper; but ordinarily iron obtained by barter, or from wrecks is used in the manufacture of spears.

† The original is deposited in the Museum of Science and Art, Dublin.

and therefore these paintings may have some religious significance, but it may be that they are regarded as the orthodox heading of even purely civil records.

At first it occurred to me that this was merely an inventory of the property of the deceased, but as some of the objects are certainly not such as we should expect to find in an enumeration of property, *e.g.*, the lizard, while the figures of men appear to portray particular emotions, it seems probable that the objects represented have a more or less conventional meaning, and that we have here a document of as *bonâ fide* and translatable a character as an Egyptian hieroglyphic inscription.

My own efforts to discover an interpretation from the natives on the spot were not crowned with success, and I have now to regret that I did not persevere, as some of the more intelligent and intelligible inhabitants near the settlement at Kamorta would probably have been able to explain the meaning of the signs.

Mr. De Röepstorff, Extra Assistant Superintendent of the Andamans and Nicobars, to whom I applied for such information as he might be able to collect upon the subject, assured me by letter in 1873, that the screens had a religious significance, and were used to exorcise spirits, but he did not seem to regard them as capable of being interpreted. However, I am not quite satisfied that this view is correct, and I therefore hope that some one, having an opportunity of doing so, may give special attention to the point.

The following is a list of the objects depicted, besides animals; many of the common utensils in use in a Nicobarese household are included:—

1. The sun and stars; 2. The moon and stars; 3. Swallows or (?) flying fish; 4. Impression of the forepart of a human foot; 5. A lizard (Hydrosaurus ?); 6. Four men in various attitudes; 7. Two *dâs* for cutting jungle; 8. Two earthen cooking vessels; 9. Two birds; 10. An axe; 11. Two spears; 12. A ladder (?); 13. Dish for food; 14. Cocoanut water vessels; 15. Palm-tree; 16. A canoe; 17. Three pigs; 18. Shed; 19. Domestic fowl; 20. Seaman's chest; 21. Dog; 22. Fish of different kinds; 23. Turtle.

*Authorities on the Nicobar Islands not included in, and subsequent to Mr. Distant's List.** By V. BALL, M.A., F.G.S.

Travels of two Mahomedans through India and China. Translated from the Arabic, by the Abbé Renaudot. Re-translated from French into English, "Harris's Voyages and Travels," Vol. I, p. 523.

First Voyage written by Soliman, A.H. 237, A.D. 851. Second, by Abu Zaid-l-Hussan of Siraf, A.H. 303 = A.D. 916.

JAMIN-T-TAWARIK, by Rashidu-d-Din, A.H. 710 = A.D. 1310. Lakermeran-Nicobars.

Vide "History of India," by Sir Henry Elliot, Vol. I, p. 71, and remarks upon the above by Colonel H. Yule, J.R.A.S., Vol. IV, N.S., part 2, p. 352.

NICOLO CONTI, A.D. 1420–1430.

Vide "India in the 15th Century," Introduction, Hakluyt Society. The remarks on the voyages of Sindbad the Sailor are of particular interest. It is possible that the Island of Nacous, visited by Sindbad, was one of the Nicobars.

FERNANDEZ. An account of the Empire of China, Historical, Political, Moral, and Religious, written in Spanish, by the R. F. F. Dominic, Fernandez Navaretti, 1667. Translated in "A Collection of Voyages and Travels, etc.," Vol. I, Book VI, chap. 19, p. 273. London, 1752.

PÈRE FAURE, S.J. Letter to Père de la Boësse, S.J., dated 17th January, 1711. From the "Lettres Edifiantes et Cirseuses," Toulouse, 1810.

PÈRE TULLANDIER, S.J. to Père Willard, S.J., dated 20th February, 1711, t.c., p. 58.

KŒPING. Voyage of, Stockholm, 1743.

BOLT'S Recueil des pièces authentiques relatives aux affaires de la ci-devant Société Impèriale Asiatique de Trieste Genie à Anvers. Bruxelles 1787, p. 78.

TOPPING. "Journal of a Voyage in the Bay of Bengal" (visited Nicobars, October 1790.) Selections from records of the Madras Government, No. XIX, 1855, pp. 31, 35.

COLEBROOKE, Lt. R. H. On the Islands Nancoury and Comarty. "Asiatic Researches," Vol. IV, 1795, p. 129.

HAMILTON. East India Gazetteer, London, 1805.

HORSBURG. East Indian Directory, Vol. II, 1836. Reprinted in "Records of the Government of India," No. LXXVII, 1870, p. 1.

* "Journal of the Anthropological Institute," vol. vi, No. iii, p. 209.

Selections from the Calcutta Gazetteer, Calcutta, Vol. V, 1823, p. 94.

BUSCH. Journal kept on board the schooner "L'Espiegel" on a cruise amongst the Nicobar Islands, in 1845. Reprinted in the "Records of the Government of India," No. LXXVII, 1870, p. 9.

MCCLELLANDT, Dr. Analytical report on specimens of coal from the Nicobars, 31st May, 1845. "Records of the Government of India," Vol. LXXVII, 1870, p. 28.

BARBE, Rev. P. Notice of the Nicobar Islands, "Journal of the Asiatic Society of Bengal," Vol. XV, 1846, p. 344.

" Sketches at the Nicobars, "Journal of the Indian Archipelago," Vol. III, 1849, p. 261.

CHOPPARD, Rev. J. M., Missionary Apostolic. "A few particulars respecting the Nicobar Islands," dated 2nd June, 1844. "Journal of the Indian Archipelago," Vol. III, 1849, p. 271. Reprinted in the "Records of the Government of India," No. LXXVII, 1870, p. 68.

SCHERZER, Dr. KARL. "Reise der Novara um die Erde," 1861, Vol. II, p. 79. "Statistics and Commerce," Vol. I, p. 291; "Medical Report," Vol. I, Sec. VIII.

MAN, Col., AND KING, Dr. Report on the Nicobar Islands, April 1869. Port Blair, Pamph. 1869.

BALL, V. "The Nicobar Islands," "Calcutta Review," No. CII, 1870, p. 246.

BALL, V. "On the Language of the Nicobaarins." "Records of the Government of India," No. LXXVII, 1870, p. 258.

BALL, V. Notes on a trip to the Nicobar Islands. "Land and Water," 1870.

Besides the above, there are several minor references which might be given, but it is perhaps undesirable to enlarge the list.

I avail myself of this opportunity of pointing out that Mr. Distant* has unfortunately been misled regarding the geological structure of the Nicobar Islands by one of the authorities whom he quotes. It is neither the case that "the Great Nicobar, Little Nicobar, and Katchall are of coral formation," nor that "the other islands are of volcanic origin."

* Car Nicobar, as stated, was the only island of the group which I visited. As regards the geology of the Great Nicobar, Little Nicobar, and Katchall, I relied on the testimony of Fr. Ad. de Röepstorff ("Geograph. Mag.," vol. ii, p. 44, 1875), as also for the volcanic origin of the other islands.

Mr. Ball has omitted from his supplement to my bibliographical list, the most important paper published since that date, viz.: "Observations on Mr. Man's Collection of Andamanese and Nicobarese Objects," by Maj.-Gen. A. Lane Fox ("Journal Anthro. Inst.," vol. vii, p. 433, 1878). There is also (*ibid.* vol. viii, p. 336, 1879) a note of my own, recording information communicated by Gen. Man, as to the people inhabiting the interior of the Great Nicobar Island. —W.L.D.

Raised coral beaches do indeed occur near the coast lines of the first mentioned, and dykes of volcanic rocks have been observed in the latter, but both are mainly composed of sedimentary rocks of tertiary age as has been pointed out by Rink Hochstetter and others.

ALFRED TYLOR, Esq., F.G.S., read a paper entitled "The Laws of Ornament in the Organic World, and on the Origin of the Human Form."

APRIL 13TH, 1880.

Major-General A. LANE FOX PITT RIVERS, F.R.S., *Vice-President, in the Chair.*

The minutes of the last meeting were read and confirmed.

The following presents were announced, and thanks ordered to be returned to the respective donors:—

FOR THE LIBRARY.

From W. EASSIE, Esq.—Transactions of the Cremation Society of England, No. 1.

From Professor AGASSIZ.—Bulletin of the Museum of Comparative Zoology, at Harvard College, Cambridge, Mass., Vol. VI, No. 3.

From Professor A. ECKER.—Archiv für Anthropologie, Vol. XII, Part 3.

From the GEOGRAPHICAL SOCIETY OF METZ.—Zweiter Jahresbericht des Vereins für Erdkunde zu Metz pro 1879.

From the AUTHOR.—Mittheilungen aus der Anthropologischen Literatur Amerikas. By Dr. Emil Schmidt.

From the AUTHOR.—Eine Culturskizze des Marutse-Mambunda-Reiches in Süd-central-Afrika. By Dr. Emil Holub.

From the SOCIETY.—Proceedings of the Royal Society, No. 201.

From the SOCIETY.—Journal of the Society of Arts, Nos. 1427-1429.

From the SOCIETY.—Proceedings of the Society of Antiquaries, Vol. VIII, No. 2.

From the SOCIETY.—Bulletin de la Société de Borda a Dax, 1880, No. 1.

From the SOCIETY.—Proceedings of the Royal Geographical Society, Vol. II, No. 4,

From the SOCIETY.—Transactions of the Imperial Society of Naturalists, Moscow, Vol. XXV, Part 3.

From the SOCIETY.—Proceedings of the American Philosophical Society, Nos. 103, 104.
From the ACADEMY.—Nova Acta Academiæ Cæsareæ Leopoldino-Carolinæ Germanicæ Naturæ Curiosorum, T. XL.
From the ASSOCIATION.—Annual Report of the Geologists' Association for 1879.
From the ASSOCIATION.—Proceedings of the American Association for the Advancement of Science, 27th Meeting.
From the EDITOR.—"Nature," Nos. 543-545.
From the EDITOR.—"Athenæum," Part 627.
From the EDITOR.—Revue Scientifique Nos. 39-41.
From the EDITOR.—Matériaux pour l'histoire de l'Homme, T. XI, liv. 1, 2.

The following paper was read:—

NOTES *on the* POLYNESIAN RACE.

By C. STANILAND WAKE, M.A.I.

IN a valuable work recently published* some remarks are made with reference to the Polynesian race, which, although not inconsistent with the statements of recognised authorities, appear to me to be erroneous and, owing to their importance, to require correction. The writer of the work in question, after affirming that the whole of the Polynesian Islands are inhabited by one race, which differs very little in the several islands, gives a general description of its physical characters, and of the native arts and manufactures. Among other things it is stated that the *Mahoris*, the name there given to the brown Polynesians, "have little beard generally, though sometimes it grows pretty freely," and it is asserted that they have no bow and arrows (p. 494). These two general statements are, if true, very important, seeing that they tend to support the opinion that the Polynesian and Papuan peoples belong to quite distinct races. The bearded Mangaians of the Hervey Archipelago are distinguished from the Mahoris, so called, as the extreme eastern outliers of the Melanesian or Papuan race (p. 567), and elsewhere the lighter coloured natives of Eastern New Guinea are said to possess many features "which are characteristically Polynesian," among them being "absence of the bow and arrow" (p. 456). Mr. Wallace, the editor of the work from which these statements are taken, wrote, not long ago, in the

* "Stanford's "Compendium of Geography and Travel," ("Australasia.") Edited and extended by Alfred R. Wallace, F.R.G.S. 1879.

"Contemporary Review,"* that the Papuans of New Guinea contrast strongly with the Malays and Polynesians, being tolerably well bearded, and differ from them in having the bow and arrow, as an indigenous weapon, stating indeed that "the use of the bow and arrow by the Papuans is an important ethnological feature, distinguishing them from all the peoples by whom they are immediately surrounded, and connecting them, as do their physiological peculiarities, with an ancient wide-spread negroid type." I propose therefore to show, *first*, that the Polynesian Islanders must be described rather as a bearded than a non-bearded race, and, *secondly*, that, as a rule, they are well acquainted with the use of the bow and arrow.

As to the first point, it must be admitted that the idea of the Polynesian Islanders being an almost beardless race is not a rare one. Mr. Hale, of the United States' Exploring Expedition, in his admirable work on ethnography and philology, affirms that with them the beard is scanty and does not usually make its appearance till middle age (p. 9). Again, a recent German writer, Herr Peschel, speaks of the Polynesian and Asiatic Malays as one race, and as having "almost complete absence of beard and hair on the body" as a common character.† On the other hand, however, Prof. Lawrence long since made the remark that "although the South Sea Islanders come under the dark-coloured division of the human race, they are not at all deficient in beard." He adds that "the descriptions and figures of Cook concur in assigning to them in many cases a copious growth."‡ The general truth of Lawrence's conclusion can be established by reference to the testimony of various travellers as to the inhabitants of the several island groups of the Pacific. Thus Dr. Pickering makes the observation that the beard is not unusual among the Polynesians, although it is not strong until late in life.§ This traveller remarks, indeed, that in the Low Archipelago the Eastern and Western Paumotuans remove the beard, but he adds that it is universally worn by the natives of Disappointment Island and Penrhyn Island.‖ This would seem to be true also of the Gambier Islanders, who are said by Capt. Beechy to wear moustaches and beards, but no whiskers. One man had a beard which reached to the pit of his stomach.¶ The natives of Easter Island who, like the Penrhyn Islanders, are supposed by Mr. Gill to have been derived from the Hervey

* February, 1879.
† "The Races of Man." (English edition) p. 347.
‡ "Lectures," p. 206.
§ "Races of Man," (Bohn) p. 44.
‖ *Ibid.* p. 48 *seq.*
¶ *See* "Prichard's "Physical Researches," vol. v, p. 142.

Islands,* cut the beard short for cleanliness.† The Hervey Islanders themselves would appear to be well bearded,‡ although this is ascribed by Mr. Wallace to the presence of a Melanesian element.§ That people were derived from the Samoan group, from which the Society Islanders are said to have migrated at a still earlier date. Now, Mr. Forster long since noted that at Tahiti the chiefs and others often had strong beards,‖ a statement which is confirmed by Capt. Cook, who says that the beard is there grown long.¶ A later observer, the Rev. William Ellis, in speaking of the Tahitians and the natives of the neighbouring islands, remarks that "sometimes the men plucked the beard out by the roots, shaved it off with a shark's tooth, or removed it with the edges of two shells, acting like the blades of a pair of scissors, but cutting against each other; whilst others allowed the beard to grow, sometimes twisting and braiding it together." He states, however, that these fashions have all disappeared, and that the beard is generally at least shaved once a week, and by the chiefs more frequently.** If we approach nearer to the Samoan group, from which all the Eastern Pacific Islanders have sprung, we find that the natives of the Niue or Savage Island are able to grow the beard to a great length.†† It is true that, according to a correspondent of Dr. J. Barnard Davis, the inhabitants of the Ellice group of islands—who claim to have sprung from Samoa—"have, as a rule, a dozen straggling hairs for a beard.‡‡ It appears, however, from the same authority that on one island, Nunemaya, "the men have splendid beards," and Admiral Wilkes states expressly that the inhabitants of Fanafute, the largest island of the Ellice group, are well provided with beards, resembling in that respect the Fijians. He adds that the people generally are similar in appearance to the Hawaians, although speaking a dialect resembling the Samoan.§§ The scanty beard of some of the Ellice Islanders may perhaps be due to the fact that an Asiatic element has been introduced from the Kingsmill Islands. Admiral Wilkes mentions that a loathsome skin disease to which the former are subject is equally prevalent in the latter,‖‖ and Mr. Gill states that the natives of the Nui Island, in the Ellice

* "Life in the Southern Isles," p. 26.
† G. Forster's "Voyage Round the World," vol. i, p. 558.
‡ "Cook's Third Voyage," vol. i, p. 173.
§ *See* "Australasia," p. 507.
‖ *Op. cit.* vol. ii, p. 111.
¶ "Second Voyage Round the World" vol. ii, p. 147.
** "Polynesian Researches," 2nd edition, i, 79, 133.
†† Wood's "Natural History of Man," vol. ii, p. 395.
‡‡ "Anthropological Review," vol. viii, p. 191.
§§ "United States' Exploring Expedition," vol. v, p. 38 *seq.*
‖‖ *Ibid.* v, p. 45.

Archipelago, trace their origin to the Kingsmill group, which he supposes to have been peopled from Japan.* The last named writer affirms that the Maoris of New Zealand are in part descended from the Hervey Islanders, whom they call elder brothers,† and Capt. Cook and his companions speak of the black frizzled beards which they saw among the New Zealanders.‡ The Rev. Mr. Taylor says that the Maori rivals the European in the luxuriance of his beard,§ and Mr. J. G. Wood remarks that the Maoris have naturally a full beard, but that they remove every vestige of hair on the face in order to show the tattoo markings on it.‖ This statement agrees with Dr. J. R. Forster's observation that, in both New Zealand and the Marquesas, those who are much punctured on their faces have very little or no beard at all.¶ Captain Cook states, however, that the Marquesans, who are said to be the finest of the South Sea Islanders, have generally long beards,** and he describes the treatment of these appendages in much the same terms as are used by Mr. Ellis in relation to the beards of the Tahitians. A recent writer mentions the fact that long white human beards are highly prized by the Marquesans as decorations, and are cultivated for the purpose of being thus used.†† Pritchard makes the observation as to the natives of the Sandwich Islands, that they may almost be considered as the same nation as the Marquesans,‡‡ and they would certainly seem to agree in the possession of the beard. Capt. King remarks that the inhabitants of the Sandwich Islands "differ from those of the Friendly Isles, in suffering, almost universally, their beards to grow."§§

We should be quite justified in assuming from the foregoing facts that the Polynesian Islanders are a bearded race, but strangely enough we find that the natives of the Navigator or Samoan Islands, from which most of the other islands of the East Pacific appear to have been peopled, are usually described as being but scantily bearded. Dr. Darwin, indeed, explains the beardless character of the inhabitants of the Tongan and Samoan Archipelagoes as compared with the neighbouring Fijians on the ground of their belonging to different races.‖‖ He does not, however, refer to any authority on that point, and the important

* *Op. cit.* p. 25.
† *Op. cit.* p. 29.
‡ Forster, *op. cit.* i, 171.
§ "New Zealand and its Inhabitants," 2nd edition, p. 56.
‖ *Op. cit.* ii, 106.
¶ "Observations made during a Voyage Round the World," p. 271.
** "Second Voyage," vol. ii, p. 309.
†† Wood, *op. cit.* ii, 386.
‡‡ "Natural History," p. 336.
§§ "Voyage to the Pacific," iii, 134.
‖‖ "Descent of Man," ii, 322.

position occupied by those peoples in relation to the other members of the same race renders it necessary for us to examine into the truth of his opinion. Mr. William D. Pritchard says of the Tongan and Samoan that "he is almost beardless and abhors a hairy chin."* This, is however, by way of antithesis to the remark made in relation to the Fijian, that his beard is equally profuse as his hair and "is his greatest pride,"† so that the statement must not be taken as literally true. On the other hand, not only does Mr. G. Forster remark that the Tongans cut the beard short for the sake of cleanliness,‡ but Dr. Pickering says distinctly with reference to the Tongans that although they are usually smooth chinned in their native country, many of them in Fiji had "managed to foster considerable beards in imitation of the fashion of the new country."§

Mr. Hale was struck with the fact that the natives of Vaitupu, or the Depeyster Islands, had all a greater luxuriance of beard than had been seen elsewhere, except at the Feejee Islands. He says further "it is difficult to understand why these natives should be so well furnished with beard beyond what we have seen in any other tribe of the Polynesian race. Even the natives of Fakaafo, to whom they appear to be most nearly allied, are as ill furnished in this respect as the Samoans."‖ We have seen however that the Tongans, like the Depeyster Islanders, can cultivate the beard when they try, and we can hardly doubt that the Samoans, to whom the Tongans are closely allied, could do so also if they wished. In the Samoan grammar of the Rev. George Pratt, a curious note bearing on that subject has been added by the Rev. S. J. Whitmee. After referring to certain exceptions to the rule in the Polynesian dialects, that words when implying a passive or intransitive relation take *o*, but when implying an active and transitive one *a*, he says: "the beard puzzles me most. Why should it take *a*? The beard is not in favour with the Malayo-Polynesians. They are accustomed to pull out the hair on their faces. Can it be because a man would be thus (in a measure) actively concerned in possessing or not possessing a beard, that *a* is used with it?"¶ Mr. Whitmee thinks not, but his language would seem to imply that the Polynesian Islanders, and among them the Samoans, are not naturally beardless. It is true that Mr. Hale endeavours to show that the darker complexion and more abundant beard of

* "Memoirs of the Anthropological Society of London," i, 196.
† *Ibid.* p. 195.
‡ *Op. cit.* i, p. 600.
§ *Op. cit.* p. 84.
‖ *Op. cit.* p. 161.
¶ "Grammar and Dictionary of the Samoan Language," 2nd edition, *note* page 6.

the natives of Vaitupu are due to the presence of Melanesian blood.* But this supposition is based on very insufficient grounds, which, if allowed, would require the same intermixture of races to be asserted also of the Hawaians, whom the natives of Vaitupu appear most closely to resemble.† Assuming even that some of the Polynesian peoples betray the existence of a Papuan element, it by no means follows that the beard has been derived from it, whatever may be said of other characters.

I think we shall be quite justified, in the face of the facts I have cited, in inferring that the beard has been derived by the Polynesian peoples from the same source as their general physical organisation, and that they are not naturally deficient in hair on the face. This conclusion, that the Polynesians must be regarded as a bearded race, is confirmed by the presence among the Micronesians of bearded men who resemble in other respects the former race. Thus although the natives of the Kingsmill Islands, who are described by Wilkes as being totally different from the more southern natives, had but scanty beards, yet the inhabitants of Makin, or Pitt Island, one of the group, resemble the Polynesians rather than their more immediate neighbours, and have more beard.‡ According to native tradition, the islands would seem to have been peopled partly from the Caroline group and partly from Samoa, so that the Polynesian features are easily accounted for. Possibly, moreover, the brown Polynesian race may have existed in Micronesia before the advent of the Malay element, as a thick beard is by no means unknown among the inhabitants of Pelew§ and the Caroline Islands.‖ Finally, Mr. Wallace refers to the existence in the northern peninsula of Gilolo, the isle of Ceram, and in Bouru, of a tall bearded race, resembling Polynesians.¶ This is quite consistent with the view he formerly entertained, that the brown Polynesian race "can best be classified as a modification of the Papuan type,"** the Papuan being noted for his abundance of beard growth, although this view has since been considerably modified.†† Probably the truer opinion is that both Polynesians and Papuans belong to the pre-Malayan race of the Indian Archipelago, who are referred to by Mr. Keane as a taller and more muscular race than the others, with less prominent cheek bones, a lighter shade of brown, with a ruddy tinge on the cheeks, beard more

* "Ethnology and Philology," pp. 163, 168.
† *Ibid.* p. 161.
‡ *See* Wilkes *op. cit.* v, 83; Wood, *op. cit.* ii, 377.
§ Captain Wilson's "Pelew Islands," 2nd edition, p. 27.
‖ Lütke: Prichard's "Physical Researches," v. 183.
¶ "Malayan Archipelago;" ii, 449, 454.
** *Ibid.* ii, 455.
†† *See* "Australasia," p. 261.

developed, and a hair of finer texture and more inclined to a brown colour."* The Papuans would thus be Asiatic Negroes with a Polynesian admixture, or Polynesians with a negroid element, which becomes less and less apparent the farther we advance eastwards from New Guinea among the Pacific islanders.

I will now proceed to the question of the bow and arrow, and as to this I would refer first to the statement of Mr. J. G. Wood that "the weapons of the Outanatas [of New Guinea] are spears, clubs, and the usual bow and arrows which form the staple of Polynesian arms."† It may be thought, however, that this writer here confounds the Polynesians and Papuans, and certainly when we try to find in Mr. Wood's work instances of the use of the bow and arrow by distinctly Polynesian peoples, we are disappointed. We have, however, in the Rev. W. W. Gill, a personal observer, and he says expressly that bows and arrows were used in the Eastern Polynesian Islands, although for sport, not for war;‡ a fact which probably accounts for the statements of other writers that those islanders do not use the bow and arrow. The testimony of Mr. Hale agrees with that of Mr. Gill as to this implement being used for amusement, although he makes the erroneous statement that it is not included by the natives of any of the islands of Polynesia among their warlike weapons."§ The real facts of the case are well stated by the late Rev. W. Ellis, who says: "the bow and arrow were never used by the Society Islanders excepting in their amusements; hence, perhaps, their arrows, though pointed, were not barbed, and they did not shoot at a mark . . . . In the Sandwich Islands they are used also as an amusement, especially in shooting rats, but are not included in their accoutrements for battle: while in the Friendly Islands the bow was not only employed on occasions of festivity but also used in war." Mr. Ellis suggests, however, that this may have arisen from their proximity to the Fiji Islands, where it is a general weapon, and he adds that at the time he wrote, the bow and arrow had been altogether laid aside in consequence of its connection with their former idolatry.‖ We have here evidence that the bow and arrow was used for certain purposes by peoples so far apart as the Society Islanders, which here includes the Tahitians, the Sandwich Islanders and the Friendly Islanders. In addition we know from La Perouse,¶

* *Ibid.* p. 622.
† *Op. cit.* ii, 225.
‡ *Op. cit.* p. 28.
§ "United States' Exploring Expedition, Ethnology and Philology," pp. 42, 45.
‖ "Polynesian Researches," vol. i, p. 220.
¶ "Voyage Round the World" (English edition), vol. iii, p. 120.

as well as from the later United States explorers, that* the natives of the Samoan group possessed that weapon, and by other evidence that it is used by the inhabitants of Savage Island,† and among those of the Ellice Islands as a child's plaything.‡ We have already had occasion to refer to the testimony of the Rev. W. W. Gill, and doubtless he speaks with particular reference to the natives of the Hervey Islands, when he says that the bow and arrow was known to the natives of Eastern Polynesia. The early navigators saw no trace of this weapon among the Maoris of New Zealand, but that it has not always been unknown to them is evident from the fact that one dialect at least of their language, the *Waikato*,§ has words for both the bow (*kopere*) and the arrow (*pere*).

It may be asked why should so warlike a people as the New Zealanders give up the use of the bow and arrow, and almost forget the existence of such a form of weapon. The reason must be sought in the fact referred to by Mr. Gill, that it is used by the Eastern Polynesians for sport only, because "their persons were so well defended with folds of cloth that such arrows as they could get would not have pierced the skin."‖ Thus in the Sandwich Islands, "bows and arrows were," says Mr. Jarvis, "rarely used, being so poorly fabricated as to be of little utility."¶ They were, therefore, valued by the Society Islanders and Sandwich Islanders only as instruments of amusement. The inefficiency of a weapon for warlike purposes would, on the introduction of a more effective instrument, soon lead to its abandonment, as we see with the New Zealanders in the case of the spear, which they have long since abandoned for other weapons more suited to the nature of their conflicts.** The use for warfare of the bow and arrow in the Friendly Islands may, as Mr. Ellis supposes, be due to intercourse with the Fijians, but that the weapon itself has not been derived by the brown from the black race, may, I think, notwithstanding Mr. Wallace's opinion to the contrary, be safely affirmed. Mr. Ellis refers to the use of that weapon by the Sandwich Islanders in the sport of rat shooting, and it is remarkable that this amusement was a great favourite also in the Friendly Islands. According to Mariner, rat shooting was a regular game with established rules, among

* "Wilkes, "United States' Exploring Expedition," vol. ii, p. 151.

† Wood, *op. cit.* ii, 395.

‡ *See* Peschel. "The Races of Man," p. 183.

§ For reference to this tribe *see* "Te Ika a Mani," by the Rev. Richard Taylor (2nd edition), p. 315. The name for bow among some of the Brazilian tribes, as given by Neuhoff, *gura para*, is not unlike the *kopere* of the Waikato.

‖ *Op. cit.* p. 28.

¶ "History of the Hawaian or Sandwich Islands," p, 56.

** *See* Wood *op. cit*, vol. ii, p. 155.

the Tongans, and it was reserved especially for chiefs and privileged classes.* The bow and arrow was used also by the Tongans in their amusement of *fanna kalai*, or fowl shooting, a sport which was practised solely by the king and very great chiefs, the expense of keeping the trained birds required in it being so great.† In the Society Islands *te-a*, or archery, was not only held in the highest esteem, but it was apparently a sacred game, and it could be practised only at certain places and with special ceremonies.‡ I think we have in the sacred or special character ascribed to the use of the bow and arrow by these Polynesian peoples, a proof that they cannot have derived it from a foreign race. Moreover, although there was a general resemblance between those weapons as made by the Tongans and the Fijians, the bow being formed in each case of the mangrove wood or roots, and the arrows of reeds or light wood with harder pieces of wood inserted. Yet such a resemblance is no proof that the weapon was derived by one people from the other. This may have been the case with the Tongan war arrow, however, the name for which *gnahów* appears, indeed, to be the same as that of the Fijian arrow, *Ngasau*.

The Fijian word for bow is *ndakai*, while "to shoot" is *vana*, a word which curiously enough is applied under various forms by the brown race of the Pacific to the bow. In the Friendly Islands we have *fana*, in the Hervey Islands *ana*, and in the Sandwich Islands *pana*, all meaning "bow"; and also, like the Fijian word, "to shoot." It cannot be said, however, that the Polynesians have derived their words from a Fijian source, seeing that the Malay and allied peoples of the Indian Archipelago have the same word for "bow" as the Sandwich Islanders. Thus, in Sumatra, Madūra, and Bali, we have *pânah*, while in other islands, as Java, this word is used for "arrow." It would seem, from Mr. Wallace's vocabularies, to be found also among the inhabitants of the Celebes, Bouru, and Ceram. No doubt the natives of Mysol, who are said to be true Papuans, employ a form of the same word, which with them becomes *aan* or *fean*, but they could easily have received it from the Malay fishermen or sea gipsies, the Bajau referred to by Mr Wallace, who use the word *panah*.§ The fact of the same term being found among the Malayan and the Polynesian peoples for "bow" appears to be quite inconsistent with the derivation of it by them from the Fijians. The use by certain Papuan peoples of the Malay word for "bow" has, indeed, been referred to by

* "Tonga Islands," vol. i, p. 267, *seq.*
† *Ibid.* i, p. 235.
‡ "Ellis," *op. cit.* i, 217, *seq.*
§ "Malayan Archipelago," vol. ii, p. 457.

Mr. E. B. Tylor and Major-General Fox, but the statement made by the latter that, with but slight variation, this word is employed over the whole of the Papuan and Polynesian region where the bow is known,* is not exactly correct. Many Papuan tribes have, like the Fijians, a different word for that weapon. It is probable that the Polynesian Islanders carried both the weapon and the name for it together from their original home in the Indian Archipelago, and that the Fijians, in the course of their intercourse with the Tongans as described by Mr. Hale,† obtained from them the term for "to shoot," which the Polynesians, but not the Fijians, apply to the bow.

The word *fana* or *pana* might perhaps be connected with the Malay term *bunuh*, which means "to kill." Mr. Wallace asserts, however, that not only the Polynesians, but also the Malays, were not acquainted with the bow and arrow. This is an extraordinary fact, if true, considering that the Malay word for the "bow" is used throughout the whole Pacific, but it is hardly probable, seeing that the Javanese, who belong to the Malay race, have employed that weapon for centuries past. Sir Stamford Raffles gives representations of the bow and of numerous forms of arrows used by the Javanese, but he states that the weapon is used now by them only on State occasions,‡ which reminds us of the peculiar position it held among the Polynesian Islanders. Moreover, it is used by the uncivilised Malays of the small islands belonging to Sumatra,§ and is one of the weapons of the warlike Achinese‖ of Sumatra itself, although we know too little of the Malays proper to say whether they also possess it. Nevertheless, the comparative vocabulary of Sir Stamford Raffles gives words in Malayan, Madurese, and Bali, not only for "bow" and for "arrow," but also for the "arrow-barb," showing that something more than the simple arrow of sport was known to the Malays.

Major-General Fox, who has treated fully of the weapons of primitive warfare, not only refers to the use of the bow and arrow by the Polynesian Islanders, but on philological grounds thinks that they received the bow from a Malay source.¶ The Malay word may however probably be traced to the Sanskrit *Vâna*, an arrow, or to the root *Van*, to kill, injure, thrust, &c.

* "Journal of the Anthropological Institute," vol. iv, 1874, p. 305.

† *Op. cit.* p, 174, *seq.*

‡ "History of Java," i, 295. The Hovas of Madagascar have words for the bow and arrow, although these weapons are now used only by some of the northern tribes of that island. *See* Sibree's "Great African Island," p. 216.

§ "Australasia," edited by A. R. Wallace, p. 341.

‖ *Ibid.* p. 338.

¶ Catalogue of the Anthropological Collection, exhibited at the Bethnal Green Museum, 1874, p. 43.

It seems to me that we must now admit that the Polynesian race was acquainted with the use of the bow and arrow before their migrations over the Pacific, although some of the islanders have forgotten it. The source of this forgetfulness is probably not difficult to discover. Herr Peschel is doubtless wrong when he ascribes it to the fact that, hunting being impossible, the chase is not practised by the Polynesian Islanders as a means of subsistence.* We have seen, indeed, that the bow and arrow was used by the Sandwich Islanders and the Tongans in rat shooting, as well as on other occasions of sport. It is more probable that the use of that weapon, as an instrument of warfare, had died out among the ancestors of the Polynesians before the commencement of their migrations, although they carried the knowledge of it with them. This idea is consistent with the fact already referred to that the Javanese have long since given up its use. An analogous state of things would seem to have occurred among the Papuans. As Peschel points out, the Fijians now use the bow and arrow only for throwing missiles into fortified places, or leave it to the women, who thus assist in the defence of their fortified places.† In itself the Fijian weapon is inefficient and it will soon be remembered only as an instrument of sport, as with the Sandwich Islanders. Moreover, notwithstanding Mr. Wallace's statement that the bow and arrow are "almost universal among the Papuans and most of the allied frizzly-haired races,"‡ no trace of them have been met with among the natives of New Caledonia, nor were they known to the Tasmanians or to the aborigines of Australia, except in the extreme north. This fact would seem to show that the bow and arrow were unknown to the dark frizzly-haired race when it first reached the islands of the Pacific, and that the Fijians and the neighbouring allied peoples have either migrated at a later period or received that weapon from the Polynesians since their settlement. If Mr. Hale's opinion that the Fijians are a mixed race, having a Polynesian element, be true, it is of course possible that they may have learnt the use of the bow from the Tongans. The name used by them for this weapon, however, is against such an idea, and the fact that so many other Papuan peoples are well acquainted with it renders it very improbable. The facts would seem to be that at the date of the earliest Papuan migration, applying that term to the Tasmanians and

* "The Races of Man," p. 185.

† *Op. cit.* p. 184.

‡ "Contemporary Review," p. 431. According to the Rev. W. G. Lawes, the use of the bow and arrow among the natives of South-East New Guinea is restricted to the coast tribes, who are supposed to be of Malayan origin. "Journal of the Anthropological Institute," vol. viii, 1879, p. 373.

New Caledonians as well as to the Fijians, the bow and arrow were unknown to their ancestors. After that date this weapon was introduced among the Papuans, and was taken with them on their later migrations to the New Hebrides and Fijian Islands. Probably at that period the bow and arrow was used as an instrument of warfare among nearly all the peoples of the Indian Archipelago, but afterwards it came to be employed only as an instrument of sport or ceremony. Such would have been the case when the ancestors of the Polynesian race left their ancestral home in the Archipelago, and when they reached the Samoan Islands, from which as a new centre they spread, as Mr. Hale clearly shows,* over the Pacific, they carried the bow and arrow with them thus modified in its use and afterwards to be almost entirely forgotten. The Tongans alone used it as a weapon of warfare, owing to their association with the Fijians, who having migrated at an earlier period had retained the use of the bow and arrow for that purpose.

Before bringing this paper to a close I wish to say something with reference to a new name which has been proposed by Mr. W. L. Ranken for the brown Polynesians, and which Mr. Wallace has adopted in the work on Australasia edited by him. The derivation of *Mahori*, the term here referred to, is not given by Mr. Keane, who has also adopted it in his philological and ethnological appendix, but very sufficient reasons have been adduced by the Rev. S. J. Whitmee why it should not be adopted.† I feel much inclined to agree with Mr. Keane's opinion that the so-called Mahori "seem, on the whole, to be a pure unmixed race, if any such are still anywhere to be found on the globe,"‡ and as such it is very desirable that some distinctive name should be given to them to replace that of Polynesians. The word Mahori, however, is not satisfactory, and I would propose another term which has the advantage not only of being a word in common use in all the Polynesian dialects, but also of having a meaning which recommends it for adoption. I will go further and say that it is already employed in the mode desired, as we see from a passage in M. Jules Garnier's work on New Caledonia, where it is said the name *Kanak* is generally given to the islanders of the Pacific Ocean.§ Travellers among peoples of a low degree of

* *Op. cit.* p. 119, *seq.* and see Mr. Gill's work, p. 23, *seq.*

† "Journal of the Anthropological Institute," vol. viii, 1879, p. 365. Mr. Whitmee proposes to call the Polynesian *Sawaiori*, a word formed from the names of three chief peoples of that race, but I think Mahori would be preferable.

‡ *Op. cit.* p. 611.

§ This fact has been cited as a reason for not applying the term *kanaka* as proposed in the text. *See* Dr. J. Barnard Davis's, "Thesaurus Craniorum," *ante*, p. 326, but it cannot be deemed sufficient.

culture are struck by the fact that the names by which these peoples are known among themselves often denote "man," as though they were the only real men. Now a word having this meaning is found with slight dialectic variations among all the Polynesian peoples, and it is the word *Kănăkā* referred to by M. Garnier. If we look at the Rev. Mr. Pratt's "Samoan Dictionary," we find that the proper term for "man" or "mankind" is *tagata*. In Tongan the word is *tangata*, as it is also in the native languages of New Zealand, the Union Islands, the Hervey Islands, Savage Island, and the Sandwich Islands. It is even found in the same form in the small islands of the New Hebrides, such as *Nina* and *Mele*, peopled by the brown Polynesians. The Rev. Mr. Whitmee, however, in a note to the last edition of Mr. Pratt's Grammar, refers to the fact that in the Hawaian dialect the practice has been adopted of substituting in words the letter *k* for *t* and *n* for *ng*, and he states that the same practice is rapidly growing in Samoa. In this way the word *tangata* becomes *kanaka*, or *kanata*, according to whether the letter *t* is exchanged for *k* at both the commencement and end of the word, or only at the beginning, as at *Nukuhiva* of the Marquesas group. It is true that in some dialects the word for "man" appears at first sight different. Thus in Tahiti we have *ta'ata*, and in the Marquesas *anata*, but these words require only the restoration of the letters which they have evidently lost to be recognised as the *tanata* or *kanaka* of the common "Polynesian language."*

I would therefore propose to use as a designation for the brown race who inhabit the Pacific Islands the native term for "man," *kănăkā*, instead of the word *Mahori* suggested by Mr. Ranken. A commencement has indeed been made in that direction by the application of that term to the Pacific Islanders in general and to the Sandwich Islanders in particular.† Another reason for, and not an objection to, the use of the term *kănăkā* may be found in the fact that it is known in a modified form to not only the dark Fijians, but also the lighter coloured tribes of Micronesia. Father d'Aubenton, in his account of the establishment of the Jesuit Missions in the Carolinas, speaks of the principal people on the islands as *Tamoles*, and from his description of them as having "curly hair, the nose large, eyes large and extremely penetrating, and beard moderately thick," the probability is that they belonged to the Polynesian race, or *kănăkā*, or at least to an allied branch of the Papuan race. In the Erakor dialect of the New Hebrides the word for "man" is *Natamōl*, which may be intermediate between the *tamoles* of

* *See* the Rev. W. W. Gill's "Life in the Southern Isles," p. 28.
† Wallace's "Australasia," p. 529.

the Carolines and the *tamata* of the Fijian. The latter term also means "man," and with it is connected the word *tama*, a "father," which curiously enough is found in the Polynesian dialects with the sense of "child," the same word with the accent on the last letter *tamā* being used for "father." We can hardly doubt that this phrase is related to the Polynesian *tane*, a man, or male, through which the term *kanaka* or *tangata*, can probably be traced to its primitive source. In the Tanna dialect of the New Hebrides the word for "land" is *tana*, which in Fijian takes the form of *vanúa* and in the Polynesian dialects of *fenūa* or *hanūa*. The word is very valuable as showing the fundamental relationships of the Kanaka race, seeing that, according to Balbi, it is found in most of the Malay dialects in the form of *tanah* or *tanu*,* and in Malagasy as *tane*, meaning also "land." We may find in these facts another argument for the use of *kănăkā* to denote the Polynesian race. For not only does the connection of this word with that used for "land" or "earth," show that the *Kănăkā* look upon themselves as essentially an aboriginal race, the people of the soil, but it shows that they are fundamentally connected with other peoples so different from them and from each other in many respects as the Papuans and the Malays. Agreement in language is not by itself a sufficient proof of race affinity, but when combined with other important points of similarity, such as we see between the *Kănăkā* and the Papuans, we cannot doubt that they spring from a common source; although the latter have been much more modified than the former by contact with the negroid race, which would seem to have spread throughout nearly the whole of the Pacific area before the advent of the *Kănăkā*. On the same grounds the Malays also must be affirmed to bear a relationship, on one side at least, to the black and brown races of the Pacific, although on the other they probably trace their descent to an Asiatic if not Mongolian source. This view is consistent with the theory advocated by Mr. Keane that "Malaysia was originally peopled by the Mahori [Kanaka] race, which afterwards became modified in various proportions by fusion with intruding peoples from the north."†

Discussion.

Major-General Lane Fox Pitt Rivers said that he had not an opportunity of referring to his former remarks on the subject of the distribution of the bow in the Polynesian Island, but he thought his views would not be found to differ from those now expressed by

* This word, and also *tama*, are found in some of the Dyak dialects of Borneo. *See* Keppel's "Expedition to Borneo," vol. i, appendix No. ii.

† *Op. cit.* p. 622.

Mr. Wake so much as he seemed to suppose. He was not aware that he had ever said that Malay names were employed for the bow exclusively in Polynesia, but that they are in use over a great extent of that region, and the circumstance might fairly be used as an argument for the origin of the bow in those parts. No doubt its disuse might have arisen from a variety of causes.

Mr. KEANE explained that his use of "Mahori" in the Appendix to Stanford's "Australasia," referred to by Mr. Wake, had been necessitated by Mr. Wallace's adoption of that unfortunate term in the body of the work. The word itself he had already elsewhere objected to publicly, and had suggested and since used "Sawaiori" as the collective name of the large brown Polynesian race. This suggestion had been accepted by the Rev. S. J. Whitmee, who intended to substitute Sawaiori for the misguiding "Malayo-Polynesian" in his large comparative dictionary of the Eastern Polynesian languages now in progress. Against Mr. Wake's "Kanaka" there would be little to urge had it not already been rendered useless as a scientific designation by the reckless way in which it was currently employed, especially by French writers who applied it to the Melanesians, Mikronesians, Eastern Polynesians, and in fact to all the Pacific races indifferently; but whatever name might ultimately be agreed upon, it was so far satisfactory to find that ethnologists were beginning to feel the necessity of substituting some fresh and more accurate expression for Humboldt's "Malayo-Polynesian." He had otherwise listened with great pleasure to Mr. Wake's interesting paper, which went far to confirm his own conclusions regarding the mutual affinities of the Inter-Oceanic races as embodied in his monograph on that subject published in the last number of the Journal of the Institute.* It was obvious that if the Eastern Polynesians were really a bearded race, they must be ethnically separated altogether from the Mongolian, and of course also from the Malay connection, beardlessness being one of the most distinctive and universal characteristics of that type. It did not follow, however, that the Eastern Polynesians must therefore be affiliated to the Papuans, a view which Mr. Wake would scarcely have suggested had he had an opportunity of seeing the monograph above referred to. They differ more from the Papuans than they do from the Malays proper, and their true affinities must be sought in the pre-Malay Caucasian elements of the Archipelago, and the pre-Mongoloid elements of Indo-China.

* See paper "On the Relations of the Indo-Chinese and Inter-Oceanic Races and Languages," by A. H. Keane, Esq. Vol. ix, p. 254.

ANTHROPOLOGICAL MISCELLANEA.

Stature of the Andamanese.

In my paper "On the Osteology and Affinities of the Natives of the Andaman Islands," in the Journal of the Anthropological Institute, November, 1879, vol. ix, p. 111, I endeavoured to calculate the average stature of the race, from a certain number of imperfect and disarticulated skeletons at my disposal, taking as a guide the length of the femur, and assuming that this bone bears to the whole height the ratio of 275 to 1,000, as is generally done in the case of Europeans. I warned my readers that nothing more than a rough approximation could be expected from such a method, as it was far from certain that the same proportion held true in races so dissimilar. The conclusions arrived at were, however, as follows:—Of nine males, average height, 4 feet 9 inches; maximum, 5 feet 3 inches; minimum, 4 feet 6·5 inches. Of ten females, average, 4 feet 6·1 inches; maximum, 4 feet 10·3 inches; minimum, 4 feet 3·2 inches.

In a recent number of the "Proceedings of the Royal Society of Edinburgh" (1878-79, p. 416), Mr. E. S. Brander, in a paper called "Remarks on the Aborigines of the Andaman Islands," has given the actual measurements of thirty living individuals, fifteen of each sex; from which he finds for the males an average height of 4 feet 10·4 inches, the maximum being 5 feet 1½ inches, the minimum 4 feet 7½ inches; for the females an average of 4 feet 6·03 inches, maximum 4 feet 9 inches, and minimum of 4 feet 3·5 inches. The correspondence between the average heights of totally different series of individuals (in neither case very large) and arrived at by such different processes is very interesting.

W. H. Flower, F.R.S.

Chastleton Camp. Moreton-in-Marsh.

By permission of the owner an examination has been made of this interesting site. The suggestion that excavations would be of value is

due to our friend and colleague, George Harris, Esq., LL.D., F.S.A., an early Member of the Institute. Mr. Harris was present on the occasion, and in readiness to receive the party who responded to the generous invitation of Miss Whitmore Jones to inspect, not only the camp, but Chastleton House and the many objects of interest it contains. The excavations were conducted under the direction of E. W. Brabrook, F.S.A., Alfred White, F.S.A., and myself. The castrum occupies a height about half-a-mile from the Manor House at Chastleton, and is popularly known as "The Barrow," though it gives the name, formerly Cestreton, to the estate and parish. It overlooks a field called in early deeds the "Sainfoin Field," in which, at the time of our excavations, a crop was again growing. In form the camp is rectangular, though slightly rounded at the corners, and is about 400 feet in diameter. Traces of two entrances are apparent, through which there is a cart-road leading to the village of Cornwell. Contrary to the usual practice, the ramparts, instead of being formed out of the earth thrown up from the outer ditch, is built up of massive blocks of oolite, the natural stone of the district, and is a monument of great labour. On the left bank of the entrance approaching from Chastleton is a fine old ash tree, the last of four which occupied similar positions on either side of the entrances to the camp. The local historians, Wharton and Plott, were of opinion that the site is that of a Danish barrow of the tenth century. Its true origin, however, has never been recognised until the present examination, which has proved that the whole of the camp is of Roman construction. Pits were sunk and trenches cut, but no evidence, however, could be discovered of prolonged occupation, but in cutting sections through the ramparts deposits of pottery, burnt bones, and charcoal were discovered, indications to those acquainted with the writings of the *Agrimensores*,* or land surveyors, of the means by which they were accustomed to mark the limits of territory under Roman occupation, and affording further proof of Britain having been included in the same system of organization as that which prevailed in other provinces of the empire.

The position accorded to the trees is also a further illustration; such were often used as terminal marks, and in the selection of the four ash trees we discern a survival of the practice. As a rule, however, they were brought from a distance, *arbores peregrinæ*, their rarity in the district constituting a further distinctive mark. Mr.

* *See* Treatises by Siculus Flaccus, Faustus et Valerius, and others, in Lachman's edition of the "Gromatici Veteres," 2 vols. 8vo. Berlin, 1848–52. The following quotation from the former author is sufficient for the purpose, it also indicates how such deposits might be varied as to the nature of the objects selected: "Si enim essent certæ leges, aut consuetudines, aut observationes, semper simile signum sub omnibus terminis inveniretur; nunc quoniam voluntarium est, aliquibus terminis nihil subditum est, aliquibus vero aut cineres, aut carbones aut testea, aut vitrea fracta, aut asses subjectos, aut calcem aut gypsum invenimus; quæ res tamen, ut supra diximus, voluntaria est, carbo autem aut cinis quare inveniatur, una certa ratio est quæ apud antiquos quidem observata postea vero neglecta."

Coote, quoting the old writers,* speaks of the planting for such a purpose, date, almond, and quince trees in the neighbourhood of Constantinople, and olive with elder trees, etc., in the vicinity of Carthage.

Among the miscellaneous objects found were a bone pin of neat workmanship, a flint flake, burnt pebbles, and various burnt shells, chiefly *Terebratulæ*. Several animal bones were also found; these we submitted to the inspection of Prof. G. Rolleston, M.D., F.R.S., who has very kindly favoured me with the following report upon them, dated from Oxford:—

Report on Bones from Chastleton.

I was reluctantly obliged to decline to join the excursion to Chastleton, but I have been favoured with a small box of bones from that pleasant place, of which I will now say a few words.

All the bones, with two or three exceptions, are bones of domestic animals. The exceptions are constituted by two lower jaws and one upper jaw of the Water-Rat, *Apricola amphibia*. These jaws have a certain interest as they are just the parts which the Polecat, *Mustela putorius*, leaves behind, and rightly as the large rootless molars and the strong incisors of this harmless vegetable-feeding Rodent would be a hard thing for his sharp scissor-like teeth. I have found large quantities of these jaws, handfuls in fact and without exaggeration, in the lairs of polecats. The polecat is a river-haunting riparian animal, but will carry even frogs a long way away from the marshy places he finds them in.

Sus scrofa, varietas *domestica*, is represented by a few incisors. The pig, being a beast familiar to man from the very earliest times as his solidarity with man in supporting the life phases of more than one Entozoon shows, is rarely absent from the earliest prehistoric finds of Neolithic times.

The *Cow*, *Bos* (probably) *longifrons* is also represented, but scantily.

The *Sheep*, *Ovis aries* or *Goat* (there are no differentiating parts left) is also proved to have been in existence and in availability for man's use by a larger quantity of bones and some teeth.

The Horse, *Equus Caballus*, of small size, or possibly *Equus asinus* (for I have no means of ascertaining the age of these bones, nor of saying whether they did or did not belong to those "far-off times" when "our land did breed no asses"), is represented by a single *Os Calcis*.

There are no human bones, nor canine, nor feline in this series. But the bones are so broken as to prove they were "*mauled*" by man

* "Ex libris Magonis et Vegoiæ," Lachman, p. 350. "Nam in locis campestribus rariores terminos construximus, et maxime arborem peregrinam plantavimus." See also "Liber Coloniarum," Faustus et Valerius, &c. "The Romans of Britain," H. C. Coote, F.S.A., p. 67.

for his *maw*, and some look as if they might have been mumbled or gnawed by the dog for his. With these came one of those darning-needle-like awls made out of the long bone *tibia* of a small ruminant, possibly *roe*, *Cervus capriolus*, but also possibly sheep or goat. I get them from many places in this neighbourhood, of many stages in development of the world's history. They would make good packing-needles now-a-days. I do not see why these bones should not be, as far as any indications they themselves furnish, and I have no other before me of any age, not nearer to us than some 500 years or so.

GEORGE ROLLESTON, M.D.

There is nothing, therefore, in the objects found to illustrate a period, either earlier or later than the Roman occupation. And from the position and structure of the camp it would seem to be one not intended for permanent occupation, but hastily thrown up, perhaps, as suggested by Mr. Roach Smith, F.S.A., to meet some pressing emergency. It was, however, constructed upon the same principles as those which invariably guided surveyors and engineers. It adjoins the Akeman Street, a minor Roman way, running from the east of Britain to Cirencester and Bath, and is on the confines of three counties, Oxfordshire, Gloucestershire, and Worcestershire.

JOHN E. PRICE, F.S.A.

THE ALLEGED EXISTENCE OF SCYTHE-CHARIOTS IN ANCIENT BRITAIN.

IN the interesting communication read before the Institute by Mr. E. B. Tylor in April last, "On the Origin of the Plough, and Wheel-carriage," a statement occurs to the effect that the Ancient Britons used chariots with *scythes* attached to the axles. This of course is founded upon the passage in "De Orbi in Situ" of Pomponius Mela (iii. 6.) As I have not an edition in the Latin before me I can only quote the translation. "They fight not onelie on horsebacke and on foote, but also in Wagons and Chariottes, and are armed after the manner of the Galles. They call those Chariots *Couines* (Covines,) which are set with sithes round about the naues, (naves,)" page 79.* My object is to call in question the truthfulness of Mela's account. Cæsar makes no mention whatever of the *covinus*, but of the *essedum* he does, and Tacitus does not describe the scythe-chariot, although the word *covinarii* occurs. (Agricola, 35–36). No writer upon Britain, known to me, of any position as an *authority*, mentions this form of chariot, and Mela must be accepted with some caution, as he never visited Britain (although this bare fact is of no value); but those

* "The worke of Pomponius Mela, concerninge the Situation of the World, etc.," by A. Golding. 1585.

writers who have more fully described this country, and the manners and customs of its people, are silent in this respect, especially Cæsar. In all the excavations in Wales and Caledonia, not a single relic has been discovered, to show the existence of scythe-chariots, and all the statements of later historians and writers upon Celtic History, are but copies of Mela, Lucan or Silius, and valueless. The account of the discoveries made in Yorkshire, and the County of Moray, of the remains of a charioteer, throw no light upon the question raised, for the chariots appear to have been of the *essedum* type. (Wilson: "Prehistoric Annals of Scotland," vol. ii. pp. 153–158.)

Time prevents me from following this subject to its limits, but it will be interesting to know if the sickle or hook preceded the scythe, although it might be advanced that Mela merely meant *blades of metal*, similar to the scythe, as known to him. *Sickles* or implements so designated, have been discovered in Ireland and Scotland (Wilson, vol. i, p. 401.) But so far as I am aware, no scythe or blade so-called has been found, attributable to so remote a time as the Roman occupation. Mela, unsupported by a stronger authority than those herein cited, is of very little value, and upon whom reliance should be withheld for further evidence, than even Tacitus' meagre allusion.

J. Jeremiah, M.A.I.

In connection with this subject, the following references to classic literature have been communicated by Mr. Tylor since the reading of his Paper.

"Pomponius Mela, in the passage referred to (iii. 6) describes the Britons as fighting not only with horse and foot, but with chariots, and armed in Gallic fashion; the chariots which they call *covin*, are used with scythes to the axles. 'Dimicant non equitatu modo aut pedite, verum et bigis et curribus, Gallice armati: *covinos* vocant, quorum falcatis axibus utuntur.' Mela wrote under Claudius about A.D. 45, and therefore is good contemporary authority, but both the *covinus* and the scythed axles are elsewhere mentioned in the first century (see Lucan, i. 426: Tac. Agric. 35–36 Sil. Ital. xvii. 422.) The last of these passages is curious from the epithet 'cærulus' = 'blue,' possibly referring to the British warrior's blue war-paint.

'Cærulus haud aliter cum dimicat incola Thules
Agmina *falcifero* circumvenit arcta *covino*.'"

E. B. Tylor, F.R.S.

THE JOURNAL

OF THE

ANTHROPOLOGICAL INSTITUTE

OF

GREAT BRITAIN AND IRELAND.

APRIL 27TH, 1880.

Major-General A. LANE FOX PITT RIVERS, F.R.S., *Vice-President in the Chair.*

EDWARD TYREIL LEITH, Esq., LL.D., was elected a Member of the Institute.

The following presents were announced, and thanks voted to the respective donors :—

FOR THE LIBRARY.

From Prof. AGASSIZ.—Bulletin of the Museum of Comparative Zoology at Harvard College, Cambridge, Mass., Vol. VI, No. 4.

From the AUTHOR.—A Vocabulary and Outlines of Grammar of the Nitlakapamuk or Thompson Tongue, together with a Phonetic Chinook Dictionary. By J. B. Good.

—— Recherches sur les dimensions générales et sur le développement du corps chez les Japonais. By Mrs. Chaplin Ayrton.

From the ACADEMY.—Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg. Tom. 26, No. 1.

From the SOCIETY.—Journal of the Society of Arts, Nos. 1430, 1431.

—— Bulletins de la Société d'Anthropologie de Paris, 1879, Part 4.

From the Institution.—Journal and Report of the Royal Institution of Cornwall, No. 22.
From the Editor.—"Nature," Nos. 546, 547.
—— Revue Scientifique, Nos. 42, 43.
—— Revue d'Anthropologie, No. 2.
—— Revue Internationale des Sciences, No. 4.
—— "Correspondenz-Blatt," April, 1880.
—— "Athenæum," No. 628.

The following paper was read—

Further Notes *on the* Romano-British Cemetery *at* Seaford, Sussex.* By F. G. Hilton Price, F.G.S., and John E. Price, F.S.A.

Having been fortunate in obtaining a renewal of the kind permission to excavate on the Sutton Downs granted us by Mrs. Harison, of Sutton Place, and the Rev. John Harison, of North Sutton, in June, 1876, we continued the explorations for a few days during the summer of last year.

In our first notice† we erroneously supposed that this particular portion of the Downs in which we found the cemetery was called the "Warren," from the fact of its being a place swarming with rabbits, but we have since ascertained that the Warren properly so called is further to the westward, and that the spot in which we excavated is known as the Little Bury. In the published description of the cuttings made, we ascribed numbers to each, ranging from 1 to 7, and as the present communication is intended as a continuation of the previous paper we think it desirable to continue the numbering for these cuttings.

On 26th May, with three men, we commenced digging, between numbers 6 and 5, working westwards towards No. 4 on our section; this fresh trench is numbered No. 8. The trench was cut to a depth of about 6 feet; in some places where the hard sandy rock was met with at a less depth we did not pierce below it, thus in many parts we did not exceed a depth of 5 feet.

At from 4 feet to 4 feet 6 inches several black patches were observed in which fragments of burnt pottery, flints, pieces of

* In a map preserved in the British Museum relating to a survey of the Sussex Coast in the reign of Queen Elizabeth, made by Sir Thomas Palmer and others, the site of the Roman Camp on Seaford Heights is described as "Burdyck Hill," and it shows two beacons thereon. It is also known as Castle Hill and Signal Station.

† "Journal Anthropological Institute," vol. vi, p. 301.

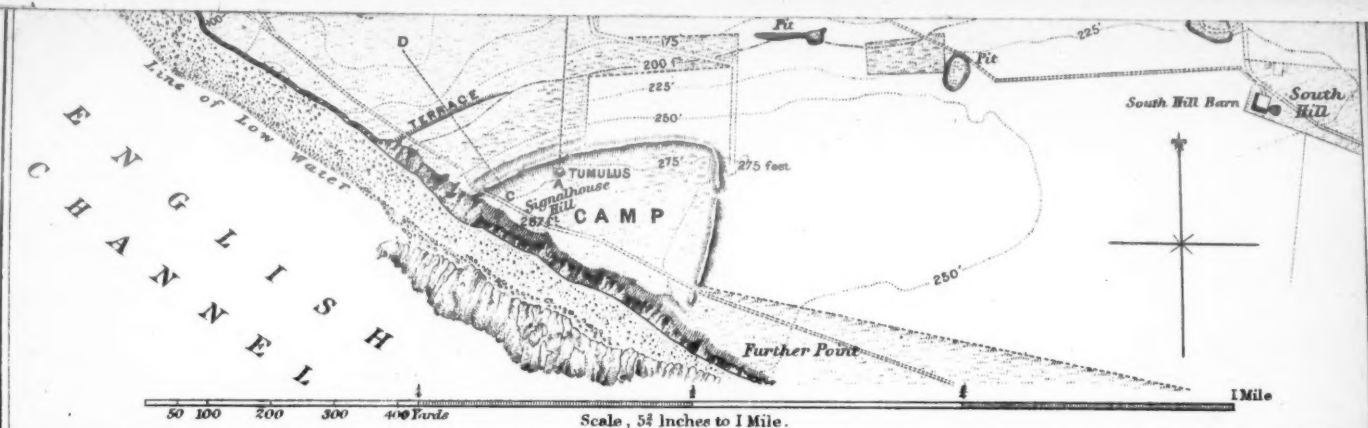
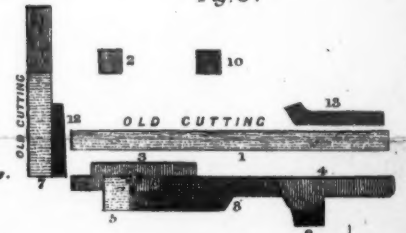


Fig. 2.

SECTION IN CEMETERY.

Fig. 3.



Reference.

1. *Trench first opened.*
2. *Dug to 6 feet - nothing found.*
3. *Three Urns.*
4. *Black plateau fragments of Pottery, Scrapers.*
5. *Several black patches.*
6. *Three Urns.*
7. *Nothing found.*
8 & 9. *Black plateau - Flints, Stones & Pottery.*
10 & 11. *Flint flakes, Pottery, &c.*
12. *Bone ashes, Charcoal, Nails, &c.*
13. *Burnt bones, Flints & Pottery.*

PLAN OF CUTTINGS IN CEMETERY.

J.P. & W.R. EMSLIE, LITH.

SEAFORD, SUSSEX.

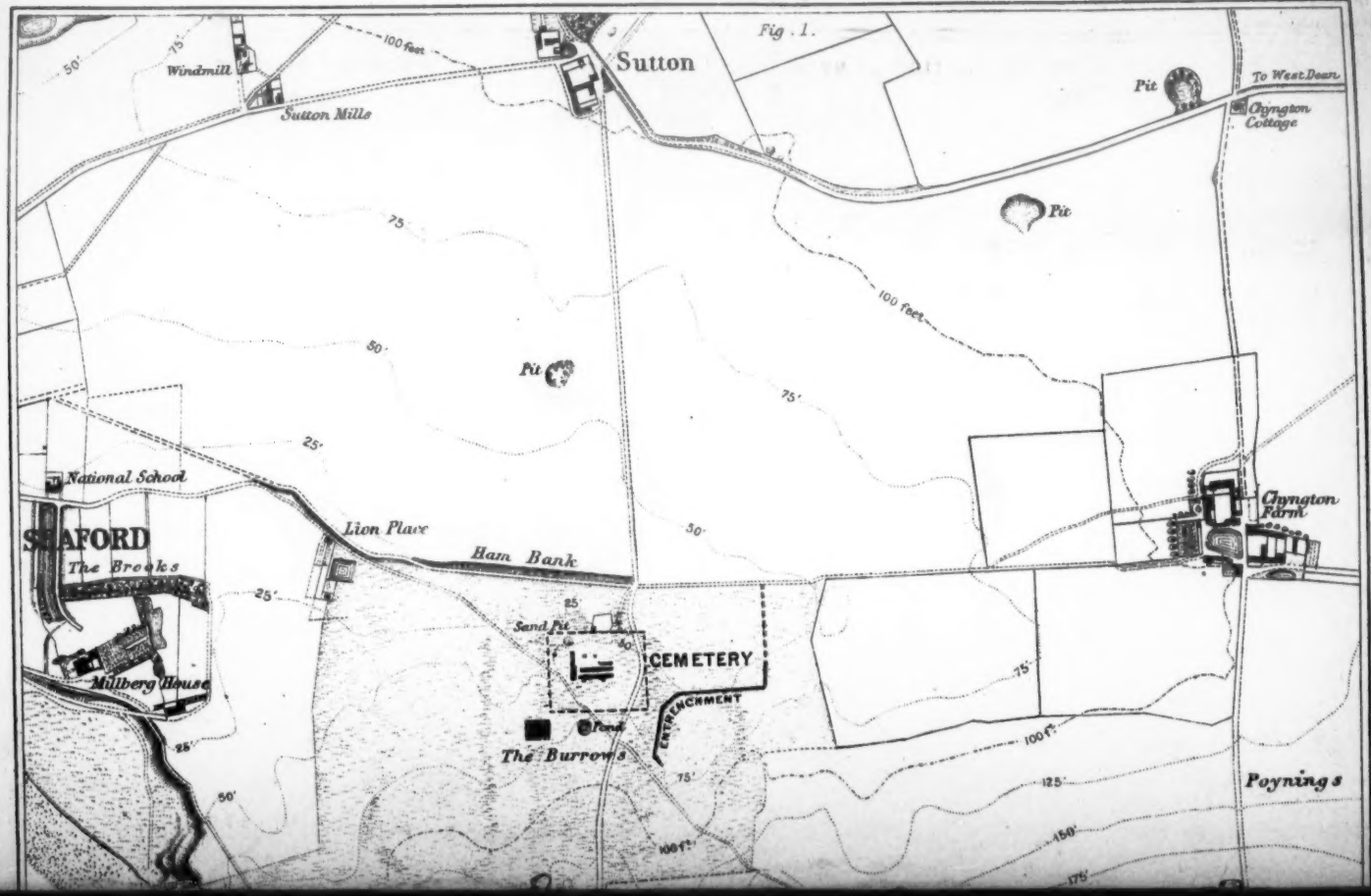


Fig. 1.
Sutton
Windmill
Sutton Mills
100 feet
To West Dean
Pit
Compton Cottage
Pit
Pit
National School
SEAFORD
The Brooks
Lion Place
Ham Bank
Compton Farm
Sand Pit
CEMETERY
ENTRENCHMENT
Millberg House
Pond
The Burrows
Poynings
50'
75'
25'
100 ft.
125'
150'
175'

charred bones and bits of charcoal were found; most of these patches contained one or more iron nails. Some of these black deposits were placed upon a quantity of stones and flints, all bearing marks of fire. As previously suggested, these black spots in the sand probably mark the place where interments have been made. After the body was burnt on the funeral pyre, the ashes were collected and placed in a cloth or in a napkin, and fastened together with the iron nails; these were doubtless instances of where the people cremated were of a poor class, probably soldiers or slaves whose friends were not in a position to afford the expense or luxury of a funeral urn.

The custom of entombing such vessels with the remains of the deceased was practised by other nations besides the Romans; for example, among certain Indian tribes, the Moldavians, Caubees, etc., and modern history tells us of the custom among the Chinese and Peruvians.*

It often happened that in out-of-the-way settlements, that is to say, stations far removed from a city or town, that the Romans made use of domestic pottery for funeral use. Among sepulchral vessels found in a ustrinum at Littington, near Royston,† was a small bottle of green glass; it had contained the ashes of a child, but a fragment of bone had evidently been too large for the bottle, so a portion had been chipped off to allow of its insertion; the broken piece had been afterwards replaced to close the aperture. If the vessel had originally been intended for the purpose, one sufficiently large would have been selected. At Colchester, in 1844, an amphora was discovered broken at the neck and handles. It contained a lachrymatory and lamp, a cinerary urn, and a coin of Faustina, with other objects, and the upper portion had been clearly reinstated by the depositors after the contents had been incased, and at times they were purposely broken for such use. Occasionally broken urns, perhaps second-hand ones, and mended urns—were used, as was proved at this very cemetery the last time we had the pleasure of describing the results of our digging.

In this same trench a neolithic celt was found (*see* Pl. XI, fig. 5), fragments of pottery, red tiles, and bits of brick. A little further on, at a depth of 4 feet from the surface, a large patch of blackened earth, mixed with charcoal, flint flakes, and upwards of 90 iron nails and studs, mixed with fragments of charred bones was met with. This is quite an exceptional case meeting with such a large quantity of nails in one interment; it is a common occurrence to meet with two or three together, but

* *Vide* Nicolo de Coti on the Habits of the Indian Tribes, Belleforest's "Cosmography," vol. ii, book iii, ch. 29.

† "Archæologia," vol. xxvi, p. 371.

in this find some were large and others quite small, apparently suggesting that the remains of the ashes after the burning were gathered together and deposited in a small wooden chest or box, ornamented with the small nails, the wood of which has long since decayed; no personal ornament or coins were found with it.

Continuing this trench towards the old cutting No. 4, we came upon the same black seam of earth, clay, flints, stones, and pottery mentioned by us in our former paper (*see* page 306, "Journal Anthropological Institute," vol. vi); this same seam was likewise met with upon the same horizon, *i.e.*, at a depth of 4 ft. 6 in. from the surface, at the cutting marked No. 9 on the plan. This circumstance proves that the place occupied by the funeral pyre was of considerable extent, and was probably the *Bustum* or *Ustrinum* of the settlement. Another round flint ball was found here.

In this same cutting on the third day we continued excavating, and soon came upon some lumps of chalk rubble in the sand. As this was an unusual circumstance, great care was observed in removing the earth; in the midst of these pieces of chalk, a brownish-black vase, 5½ inches high, of a superior texture of Upchurch pottery was met with. It was ornamented with oblique markings, inclosed within incised concentric lines, and 1½ inches from the rim is a raised band encircling the vase above the shoulders. Next to it, on the left, was a black patera, 7 inches in diameter, which was unfortunately very much broken, but sufficient was recovered to put together and show its size and shape. The patera, it will be seen, is of a coarser texture than the vase, which is really fine and of elegant shape (*see* fig. 6); with the exception of the two flint flakes, nothing else was found near it. These vessels must have been placed in the position in which they were discovered as an accompaniment to an urn, which we failed to find; but the ground immediately to the north of this was part of the trench cut in 1825 by Mr. Harison, and the remainder of the interment was probably discovered at that time.

Having now completed the section 6 to 4, it was filled in, and two men were detached to sink trial shafts at the spots marked 10 and 11; but nothing, with the exception of flint flakes and fragments of pottery, were met with, and these were in the top layer of earth.

Another section was cut on the little mound to the south of the Little Bury, but nothing was discovered.

On the 29th May four men were occupied in cutting a trench 12 feet long and 5 feet deep by about 6 feet broad, north and south, at the place marked 12 on the plan; as in 1825 a large

number of urns and coins were met with in the old cutting, which was alongside of it—and which we hoped might be found as fruitful; nothing was, however, met with, with the exception of one black patch, containing bone ashes, bits of charcoal, nails, and fragments of pottery; in the soil thrown out flint flakes and bits of pottery were numerous.

We likewise opened a supposed tumulus upon that portion of the Downs known as the Gore,* just above Green Street, and to the east of the old cottage, and made some trenches near it; but, with the exception of fragments of Roman pottery and flint flakes, we found nothing.

What is the origin of the term "Gore" for this portion of the Downs? Was it a triangular holding, and the name conferred upon it in Saxon times, or was it the site of a battle, and so named from the fact of much blood having been spilled there? Halliwell gives the meaning of it as the lowest part in a tract of country, or a small narrow slip of ground.

Quite late in the afternoon of the 29th May, whilst the men were engaged filling in the old trenches, we cast about for another suitable place to make an excavation, finding some raised ground a little north of that part of the Downs marked "The Burrows" on the map, which is situated 194 feet due west of the pond, and 114 feet south of the sand-hole. Observing a rabbit-hole in this raised ground, in the mouth of which a few fragments of pottery had been scratched out by rabbits, induced us to dig out a few spadesful of earth; by so doing, we were agreeably surprised by discovering an urn of black pottery, through one side and bottom of which the rabbits had actually forced their way: this contained fragments of charred human bones. It consisted of black pottery, and was 9 inches high; owing to its condition we were precluded from taking any other measurements. Just below the rim was a narrow band of ornamentation, consisting of oblique incised lines unevenly cut, apparently done with a blunt instrument; in parts other incised lines cut the former, forming a sort of cross pattern. Between the shoulder and the base was a large incised trellis pattern. Close beside it was another of reddish brown ware, but too much broken to be of any use. The next day (30th May) five men were put upon this digging—the turf was removed and we commenced making a long trench at a depth of 2 feet 4 inches; about the centre of the elevation a fine urn was found. It is composed of reddish brown pottery—7 inches high by 29½ inches in the widest part, and 17 inches round the base. It was full of

* So described on a map of the Sutton estate, by Thomas Marchant, 1772, measuring 20 acres 3 roods 6 perches, and belonging to Launcelot Harison, Esq.

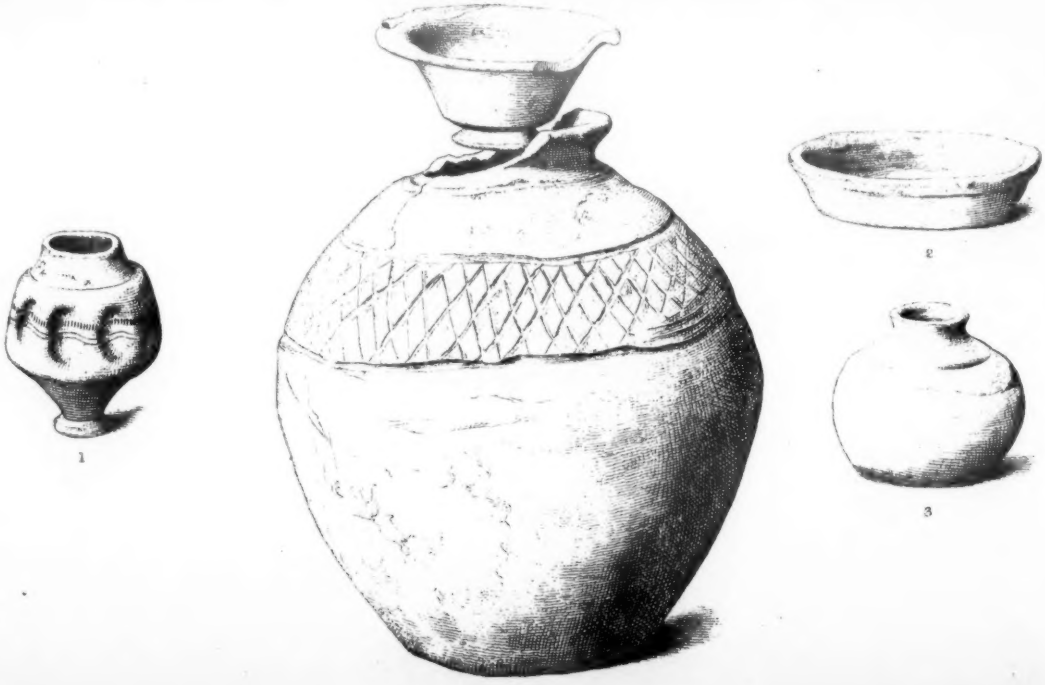
human bones, fragments of charcoal, and a flint flake. This urn is ornamented round the widest part with an incised trellis pattern, and upon the bottom is an incised cross. It is quite perfect (*see* fig. 7). A little to the right of this, at only 1 foot from the surface, a small urn of black pottery was discovered, which fell to pieces on getting it out. This we repaired. It is 4½ inches high by 22 inches in circumference in its widest part—12 inches round the base. Beneath the rim are two deep concentric lines, between which it is ornamented by three lines slanting obliquely to the left, resting at the apex of the third line against three other lines slanting in a like manner towards the right. This urn contained a small quantity of fragments of charred bones very much decayed.

Immediately behind this last described urn, in a position due north and south, at a depth of 2½ feet from the surface, we found a portion of the rim of a Samian ware vessel; the spades were now laid aside, and with a strong knife the earth was cut away in the place where this fragment was met with, and revealed a fine Samian cup, measuring 5½ inches in diameter, 2½ inches high, with a rosette at the bottom. On developing the form before attempting to remove it from the ground, we found directly below it a rim of an urn projecting from the side of the trench; following this down with the aid of the knife, we discovered that this Samian vessel formed a sort of lid to a large brownish-red earthenware urn (*see* fig. 4).

This urn measures 12 inches high, 34 inches round the widest part, and 19 inches round the base; it is ornamented on the shoulder with a band 2 inches in width, between two deep incised lines, in which are cross markings representing trellis work; before this band is another, 1½ inches deep, just below the brim, ornamented with occasional lines.

Before we could remove it from the earth the ground all around it had to be carefully cut away. On making room on the left-hand side close beside this urn, a small drinking cup 4 inches high, of the pottery known as Durobrivian ware, was taken out quite perfect; it is of a brown metallic glaze with eight indented or pinched-in compartments; it is otherwise embellished with two concentric lines with stamped markings passing through the compartments. These stamped markings are such as would now be produced by pressing the milled edge of a half-crown round an earthenware vessel before it was fired (*see* fig. 1).

In making similar preparations for removing the earth on the right-hand side of the urn, a small globular-formed bottle (fig. 3), 3 inches high by 12, without handle, of a coarse brown, thick pottery, which pottery is full of pieces of flint grains, was found quite close to the side of the urn; directly behind it was a black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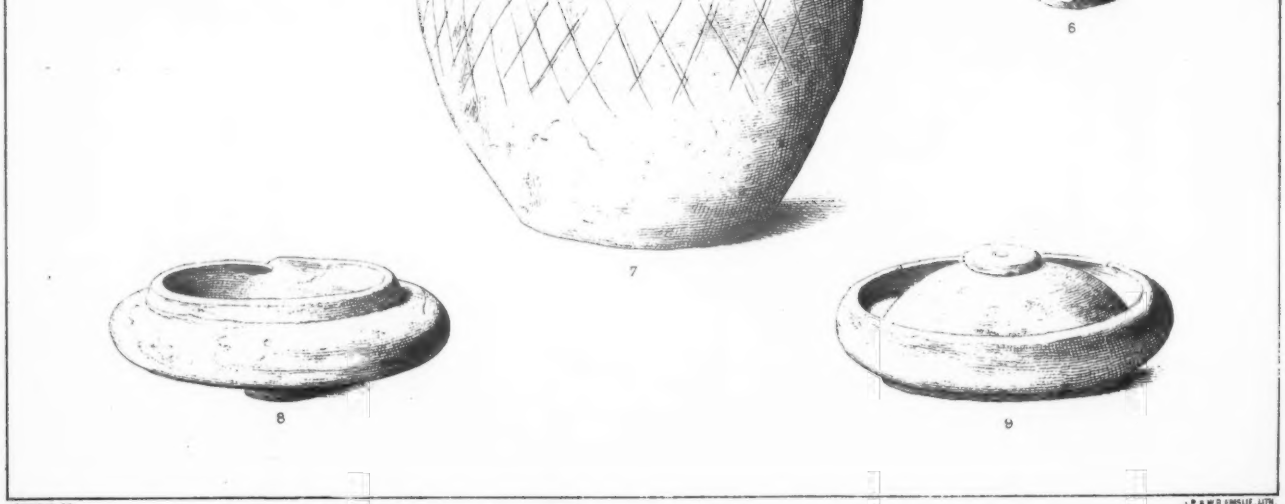

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patera 5¼ inches in diameter of Upchurch pottery (fig. 2). Upon the removal of these small vessels we were able to take out the urn, which was intact with the exception of a portion of the rim; it contained a large quantity of charred human bones and flint flakes. Owing to the Samian cup resting upon the top of it, no earth had fallen into it. This was evidently the interment of a person of some rank or importance, judging from the superiority of the vessels found with it. The Samian cup has the initials "V.E." scratched upon the side.

As this was an interesting find, particularly so as all the pieces are perfect, we have given an illustration of the manner in which they were all placed in the grave.

On the 31st May, with five men we continued the excavation in a direction due north and south; it was a remarkable circumstance that in this particular spot all the urns were found lying in that position.

At a depth of 1 foot 6 inches from the surface the fragments of an urn of very fine yellowish red pottery were discovered; there was not sufficient of it collected to repair, but the base of it measured 3½ inches in diameter. At the same level and in close proximity, the base of a coarse brownish urn was met with, this, too, had been too much crushed to do anything with; it measured 16 inches round the base and had a double cross or star incised upon the bottom of it. In close contact to this was another, No. 8, of reddish-brown pottery, bearing marks of having been turned on the lathe; like the two former, the base only can be put together; it was a low open-mouthed vessel, measuring 13 inches round the base and does not bear any marks or ornamentation.

At a depth of 1 foot 2 inches we came upon a red cup of Samian ware with a turn-over rim; it bears indications of having been covered over with red glaze, portions of which still remain underneath (figs. 8 and 9). This patera is not as fine as most Samian pieces, which makes us think it was of provincial manufacture, particularly as it is very unusual for Samian pottery to lose its lustrous glaze. Such ware has, however, before been found in Sussex, and sometimes of a superior character. Among sepulchral remains discovered at Densworth, in the parish of Funtington, and with examples of glass, were pateræ of Samian pottery. Among the coins then found were some which gave a clue to the age of the deposits; for instance, a brass of Hadrian, legible but in bad condition. The presence of such Samian vessels would, apart from numismatic evidence, at once connect these burials with the Roman period. This ware was in universal use, and though the finer descriptions were doubtless imported from manufactories on the continent, there is much

to favour the opinion that it was also fabricated in Britain. Of late years a mould for the production of one of the large embossed bowls has been found at York, bearing a strong resemblance to similar objects discovered in the neighbourhood of the Rhine; the deposits of such ware in the locality known as the Pan Rock, off the coast near Whitstable and Herne Bay, are also indications that potteries once existed there for the manufacture of this lustrous ware, akin to those so well known in connection with the black pottery at Upchurch Marshes. The inside measure is 5½ inches in diameter, in the widest part of the rim it measures 7½ inches in diameter, and is 3 inches high. The outside beneath the turnover rim tapers down to the foot, which is two inches in diameter.

Within a few feet of the latter we discovered a red patera of Samian ware, bearing a lustrous glaze; it was unfortunately broken before removing it from the earth, but we have roughly mended it. It is 7½ inches in diameter and 2¼ inches high; beneath it was a first brass of Faustina the younger, daughter of Pius, and wife of Marcus Aurelius. It was highly satisfactory finding this coin, as by so doing we have an approximate date for the interment, and can positively assert that it was not earlier than quite late in the second century, as Faustina flourished between 161 and 180 A.D.

Immediately above these two Samian vessels was an urn of thin reddish-brown pottery (No. 9), which was unfortunately crushed in the ground, probably owing to its being so near the surface.

Much of it was decomposed from the effects of the moisture. At two inches from the rim it was ornamented with a concentric furrow, beneath which are short vertical cuts, a quarter of an inch in length, made with a blunt tool; one and a-half inches below was another furrow and a similar line of markings. This urn had contained bones, as several fragments of charred bones were met with mixed up with it, likewise a large flat flint flake, and an iron nail.

We continued digging about this place for about a whole day, but as no further indications of an interment were visible, and supposing that we had worked out this spot, we caused the whole to be filled in.

On the 2nd June we recommenced operations in the Little Bury, at the place marked No. 13 on the plan. We dug a trench east and west and discovered several black patches in the sand similar to those found in trenches No. 6 and 8, containing burnt bones, burnt flints, potsherds, flint flakes, and a neolithic celt.

The foregoing researches close for the present our operations

at Seaford. It is probable that much more could be done, but the work accomplished, both as regards the camp and the cemetery outside its ramparts, is sufficient for the purpose. On the range of downs between the valleys of the Ouse and Cuckmere there are many barrows which have been partially examined from time to time. In these, instances of cremation and inhumation occur side by side, and the pottery discovered partakes of that mixed description know as British, Romano-British, or Roman pottery. Of indications of an earlier occupation than that illustrated by the rough air-dried earthenware technically known as British pottery no record exists; anything that can be properly styled "prehistoric" may be said to be conspicuous by its absence, the people whose remains are from time to time disinterred upon the Sussex Downs are mostly those of an age little antecedent to the Roman occupation; indeed the association that is continually met with in all such researches as at present, points to a common resting-place both for the native and colonising race.

The Chairman exhibited and described a series of plans and relics in connection with his recent explorations at Mount Caburn, near Lewes. A discussion ensued in which Mr. F. G. Hilton Price, F.G.S., Mr. John E. Price, F.S.A., Mr. A. Tylor, F.G.S., Mr. A. L. Lewis, M.A.I., Mr. J. Park Harrison, M.A., and others took part.

Notes on FIJIAN BURIAL CUSTOMS. By the Rev. LORIMER FISON.

THE Rev. Thomas Williams, in his valuable work on "Fiji and the Fijians," has described the funeral ceremonies which came under his notice. To that account many interesting particulars may be added, for there is no uniformity of custom in Fiji, and no description of what is done by any one tribe can be taken as applicable to all the others.

One custom, however, seems to have been everywhere practised, namely the strangling of widows that they might be buried with their dead husbands. On the death of a great chief, many women were thus sacrificed, the victims being generally his *watina lalai*, or "little wives," *i.e.*, women of inferior rank, though sometimes one or more of the *watina mbau*, who were all *marama*, or ladies of rank, would volunteer to be buried with him. The strangled women were called the *thōthō*, or "carpeting of his grave."

In some parts of the group it is* the duty of the widow's brother to perform, or least to superintend the strangling, and he is summoned to do his office either by the kinsfolk of the deceased or by the widow herself. In one case within my own knowledge, a chief was found dead under his mosquito curtain by his wife. She at once went in search of her brother. "O Matakimbau," she cried, "Malani is dead! Take pity upon me and strangle me to-day." "All right," her brother replied. "Go now and bathe yourself, and put on your ornaments. You shall be strangled by-and-by." And strangled she was in spite of the resident missionary's efforts to save her life.† At Solevu (Vanua Levu) I was told that sometimes the friends of the deceased wish to spare the widow, and intercede for her with her brother, who is always at least ostensibly unwilling to grant their request. If their entreaties be of no avail one of them (probably he who wants to marry the woman) takes hold of her arm, and tries to drag her away. Her brother seizes her by the other arm, and a struggle ensues, on the issue of which depends the woman's fate. If her brother prevail, she is strangled without more ado; but if her husband's kinsman prove the stronger her life is spared. It is quite possible that the brother's unwillingness to spare the widow may be always real, for the man who fails to strangle his sister on the death of her husband, is despised by his brother-in-law's kinsfolk, and is ashamed to visit them; whereas he who fulfils the duty is honoured by them, and is treated with marked respect whenever he goes to see them. Moreover, a substantial mark of their regard is bestowed upon him, the strangling cord being hung up by them on a piece of land, which thereby becomes his property.

A man belonging to the Nandi tribe (the nearest neighbours of those Solevu folks, and *therefore* continually fighting with them) said to me, "I have found the good of the strangling; twice it has saved my life. My father was a Solevu man, and was killed when I was a child. My mother was strangled at Solevu by her brother, and he brought me here to Nandi, and reared me.

"Twice in war time I came suddenly upon the Solevu warriors, and crouched down, expecting death. The clubs were raised to kill me, but some one who knew me cried out, 'his mother was strangled among us,' and they saved me alive. They took me to

* It must be borne in mind that the present tense is used in this memoir for the sake of convenience, where the past tense ought to be employed. Most of these customs have been abandoned since the introduction of Christianity by the Wesleyan Mission.

† It is scarcely necessary to say that she and her friends were heathens.

the town, made a feast for me, and sent me away with many presents."

When a woman is about to be strangled that she may be buried with her husband, she is made to kneel down, and the cord (a strip of native cloth) is put round her neck. She is then told to expel her breath as long as possible, and when she can endure no longer to stretch out her hand as a signal, whereupon the cord is tightened, and soon all is over. It is believed that, if this direction be followed, insensibility ensues immediately on the tightening of the cord; whereas, if inhalation has taken place, there is an interval of suffering.

An excuse for the practice of widow-strangling may be found in the fact that, according to Fijian belief, it is a needful precautionary measure; for at a certain place on the road to Mbulu (Hades) there lies in wait a terrible god, called Nangga-nangga, who is utterly implacable towards the ghosts of the unmarried. He is especially ruthless towards bachelors, among whom he persists in classing all male ghosts who come to him unaccompanied by their wives. Turning a deaf ear to their protestations, he seizes them, lifts them above his head, and breaks them in two by dashing them down on a projecting rock. Hence it is absolutely necessary for a man to have at least one of his wives, or at all events, a female ghost of some sort following him.

Women are let off more easily. If the wife die before her husband, the desolate widower cuts off his beard, and puts it under her left armpit. This serves as her certificate of marriage, and on her producing it to Nangga-nangga, he allows her to pass.

In some places the chief's favourite henchman also is buried with him; and in other places we find evident survivals of this custom, though the custom itself has died out. Thus on the death of the Torandrekéti, or chief of the Tokatoka tribe, his follower lies down in the grave with the strangled women until the body is lowered, and then returns to the upper air. At Matailombau (an inland tribe of Navitilevu), the headman of the "undertakers," called the Mbouta, retires after the burial of the chief to a solitary hut which has been built for him in some out-of-the-way place, and remains there for several months in seclusion. The whole neighbourhood of his dwelling is strictly *tambu* (tabooed) to all, excepting certain persons who are appointed to take him his food, which they do secretly by night; and a warning mark is set up at the place where he goes to bathe, that all passers by may know it is the *silisili ni Mbouta* (the Mbouta's bath), and so avoid it. At Vunda, on the north-west coast of the same island, when a chief is buried, the two

headmen of the grave-diggers, who are his Ngganggáli, retire after the funeral to a house in the town and remain there, it may be for a whole year. They paint themselves black from head to foot, and only leave the house by night. If compelled to go outside during the day, they cover themselves with a mat. A fiction is kept up that they are invisible, or rather non-existent. People may be coming and going to and from the house all day long, but they take no notice of the Ngganggáli; in fact, nobody is supposed to see them. Their food is brought into the house in silence, or is formally presented to imaginary guests with the usual speech.

At one place, at least, on the island of Vanua Levu, there is a ghastly custom. A noted "brave" is distinguished from the common herd after death by being buried with his right arm sticking out above the gravemound, and passers by exclaim with admiration as they look upon the fleshless arm, "Oh, the hand that was the slayer of men!"

In many widely separated parts of the group a custom prevails which is found in Central Africa also, and elsewhere. For some days after the decease of a ruling chief, if his death be known to the people, the wildest anarchy prevails. The "subject tribes" rush into the chief town, kill pigs and fowls, snatch any property they can lay their hands on, set fire to houses, and play all manner of mischievous pranks, the townsfolk offering no resistance. Hence the death of a ruling chief is studiously concealed for a period varying from four to ten days. At Nalawa (Navitilevu) a log is placed on his bed, covered with his coverlet, and his attendants sit by fanning it, and talking to it as if he were still alive. These attendants are men belonging to a clan whose business it is to nurse the chief when he is sick, and to bury him when he dies. They take sole charge of him during his last illness, remove him to the Mbure-kalou (god's house, or temple) whence they jealously exclude all but themselves; and when he dies they conceal his death even from his nearest kinsfolk. Elsewhere, the headman of the Mbouta before mentioned personates the dead chief, and issues his orders from within the mosquito curtain of native cloth, in the faint querulous tones of a sick man.

When the secret oozes out, the people come rushing in great excitement to make inquiries, and are blandly informed by the Mbouta that they are too late. "Is the chief dead yet?" "It is he who was buried ten days ago." "*Sa nggai rusa na yángona.*" ("His body is decomposed by this time.") And the baffled inquirers go away grumbling, for their opportunity has passed away and is lost. The idea seems to be that not until decomposition may be supposed to have made considerable progress is

the dead man fairly done with, and his authority handed over to his successor. The dead hand can no longer wield the sceptre, but it has not yet relinquished its grasp; and the old communal idea asserts itself now that the power which kept it down is in abeyance. Hence the interval of anarchy if the death be not concealed. I have met with traces of a similar belief among certain Australian tribes, who seem to think that the spirit does not finally escape from the body until decomposition sets it free. It must, however, be noted that the customs of some other Fijian tribes do not fall in with this notion, as will presently appear.*

Two instances may be given here which seem to mark the gradual subsidence of this custom. At Nakasaleka (Kandávu) it is the property of the chief alone which is subject to lawless seizure on his decease. As soon as it is known that he has drawn his latest breath, the people† flock into his house, and lay violent hands on all the movables therein. To guard against this, whenever the chief is seriously ill his friends are careful to remove the most valuable articles to other houses for security. At Navatu (north coast of Navitilevu), on the fourth night after the burial of the ruling chief, a solemn *méke* (song and dance) is performed by the assembled people. There is a pause in the music, and a voice calls out "My five whale's teeth are So-and-so's." The song goes on again. Another pause, and another shout, "My ndalo plantation to So-and-so." Again a strain of music, and again a pause, "My gun to So-and-so," and so on until nearly all the property of the townsfolk has changed hands. Whatever is proclaimed as a gift to yourself you must call out a fair equivalent in return, or you will be looked upon as a disgracefully shabby fellow, and your life will be made a burden to you. Here we see the old communal idea asserting itself, but in an orderly manner, and without the violence which is elsewhere displayed.

By many tribes the burial place of their chief is kept a profound secret, lest those whom he injured during his lifetime should revenge themselves‡ by digging up, and insulting or even eating his body. In some places the dead chief is buried in his own house, and armed warriors of his mother's kin keep watch night and day over his grave. After a time his bones are taken up and carried by night to some far-away inaccessible cave in the mountains, whose position is known only to a few trustworthy men. Ladders are constructed to enable them to reach

* *See* "Nakelo Burial," p. 16.

† Williams tells us that at Mbua (Vanua Levu) only the kinsfolk of the dead are allowed this license.

‡ "—— should revenge themselves." Is it not possible that this may explain the fate of those who dug the grave of Alaric?

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A man belonging to the Nandi tribe (the nearest neighbours of those Solevu folks, and *therefore* continually fighting with them) said to me, "I have found the good of the strangling; twice it has saved my life. My father was a Solevu man, and was killed when I was a child. My mother was strangled at Solevu by her brother, and he brought me here to Nandi, and reared me.

"Twice in war time I came suddenly upon the Solevu warriors, and crouched down, expecting death. The clubs were raised to kill me, but some one who knew me cried out, 'his mother was strangled among us,' and they saved me alive. They took me to

* It must be borne in mind that the present tense is used in this memoir for the sake of convenience, where the past tense ought to be employed. Most of these customs have been abandoned since the introduction of Christianity by the Wesleyan Mission.

† It is scarcely necessary to say that she and her friends were heathens.

the town, made a feast for me, and sent me away with many presents."

When a woman is about to be strangled that she may be buried with her husband, she is made to kneel down, and the cord (a strip of native cloth) is put round her neck. She is then told to expel her breath as long as possible, and when she can endure no longer to stretch out her hand as a signal, whereupon the cord is tightened, and soon all is over. It is believed that, if this direction be followed, insensibility ensues immediately on the tightening of the cord; whereas, if inhalation has taken place, there is an interval of suffering.

An excuse for the practice of widow-strangling may be found in the fact that, according to Fijian belief, it is a needful precautionary measure; for at a certain place on the road to Mbulu (Hades) there lies in wait a terrible god, called Nangga-nangga, who is utterly implacable towards the ghosts of the unmarried. He is especially ruthless towards bachelors, among whom he persists in classing all male ghosts who come to him unaccompanied by their wives. Turning a deaf ear to their protestations, he seizes them, lifts them above his head, and breaks them in two by dashing them down on a projecting rock. Hence it is absolutely necessary for a man to have at least one of his wives, or at all events, a female ghost of some sort following him.

Women are let off more easily. If the wife die before her husband, the desolate widower cuts off his beard, and puts it under her left armpit. This serves as her certificate of marriage, and on her producing it to Nangga-nangga, he allows her to pass.

In some places the chief's favourite henchman also is buried with him; and in other places we find evident survivals of this custom, though the custom itself has died out. Thus on the death of the Torandrekéti, or chief of the Tokatoka tribe, his follower lies down in the grave with the strangled women until the body is lowered, and then returns to the upper air. At Matailombau (an inland tribe of Navitilevu), the headman of the "undertakers," called the Mbouta, retires after the burial of the chief to a solitary hut which has been built for him in some out-of-the-way place, and remains there for several months in seclusion. The whole neighbourhood of his dwelling is strictly *tambu* (tabooed) to all, excepting certain persons who are appointed to take him his food, which they do secretly by night; and a warning mark is set up at the place where he goes to bathe, that all passers by may know it is the *silisili ni Mbouta* (the Mbouta's bath), and so avoid it. At Vunda, on the north-west coast of the same island, when a chief is buried, the two

headmen of the grave-diggers, who are his Ngganggáli, retire after the funeral to a house in the town and remain there, it may be for a whole year. They paint themselves black from head to foot, and only leave the house by night. If compelled to go outside during the day, they cover themselves with a mat. A fiction is kept up that they are invisible, or rather non-existent. People may be coming and going to and from the house all day long, but they take no notice of the Ngganggáli; in fact, nobody is supposed to see them. Their food is brought into the house in silence, or is formally presented to imaginary guests with the usual speech.

At one place, at least, on the island of Vanua Levu, there is a ghastly custom. A noted "brave" is distinguished from the common herd after death by being buried with his right arm sticking out above the gravemound, and passers by exclaim with admiration as they look upon the fleshless arm, "Oh, the hand that was the slayer of men!"

In many widely separated parts of the group a custom prevails which is found in Central Africa also, and elsewhere. For some days after the decease of a ruling chief, if his death be known to the people, the wildest anarchy prevails. The "subject tribes" rush into the chief town, kill pigs and fowls, snatch any property they can lay their hands on, set fire to houses, and play all manner of mischievous pranks, the townsfolk offering no resistance. Hence the death of a ruling chief is studiously concealed for a period varying from four to ten days. At Nalawa (Navitilevu) a log is placed on his bed, covered with his coverlet, and his attendants sit by fanning it, and talking to it as if he were still alive. These attendants are men belonging to a clan whose business it is to nurse the chief when he is sick, and to bury him when he dies. They take sole charge of him during his last illness, remove him to the Mbure-kalou (god's house, or temple) whence they jealously exclude all but themselves; and when he dies they conceal his death even from his nearest kinsfolk. Elsewhere, the headman of the Mbouta before mentioned personates the dead chief, and issues his orders from within the mosquito curtain of native cloth, in the faint querulous tones of a sick man.

When the secret oozes out, the people come rushing in great excitement to make inquiries, and are blandly informed by the Mbouta that they are too late. "Is the chief dead yet?" "It is he who was buried ten days ago." "*Sa nggai rusa na yangona.*" ("His body is decomposed by this time.") And the baffled inquirers go away grumbling, for their opportunity has passed away and is lost. The idea seems to be that not until decomposition may be supposed to have made considerable progress is

the dead man fairly done with, and his authority handed over to his successor. The dead hand can no longer wield the sceptre, but it has not yet relinquished its grasp; and the old communal idea asserts itself now that the power which kept it down is in abeyance. Hence the interval of anarchy if the death be not concealed. I have met with traces of a similar belief among certain Australian tribes, who seem to think that the spirit does not finally escape from the body until decomposition sets it free. It must, however, be noted that the customs of some other Fijian tribes do not fall in with this notion, as will presently appear.*

Two instances may be given here which seem to mark the gradual subsidence of this custom. At Nakasaleka (Kandávu) it is the property of the chief alone which is subject to lawless seizure on his decease. As soon as it is known that he has drawn his latest breath, the people† flock into his house, and lay violent hands on all the movables therein. To guard against this, whenever the chief is seriously ill his friends are careful to remove the most valuable articles to other houses for security. At Navatu (north coast of Navitilevu), on the fourth night after the burial of the ruling chief, a solemn *méke* (song and dance) is performed by the assembled people. There is a pause in the music, and a voice calls out "My five whale's teeth are So-and-so's." The song goes on again. Another pause, and another shout, "My ndalo plantation to So-and-so." Again a strain of music, and again a pause, "My gun to So-and-so," and so on until nearly all the property of the townsfolk has changed hands. Whatever is proclaimed as a gift to yourself you must call out a fair equivalent in return, or you will be looked upon as a disgracefully shabby fellow, and your life will be made a burden to you. Here we see the old communal idea asserting itself, but in an orderly manner, and without the violence which is elsewhere displayed.

By many tribes the burial place of their chief is kept a profound secret, lest those whom he injured during his lifetime should revenge themselves‡ by digging up, and insulting or even eating his body. In some places the dead chief is buried in his own house, and armed warriors of his mother's kin keep watch night and day over his grave. After a time his bones are taken up and carried by night to some far-away inaccessible cave in the mountains, whose position is known only to a few trustworthy men. Ladders are constructed to enable them to reach

* *See* "Nakelo Burial," p. 16.

† Williams tells us that at Mbua (Vanua Levu) only the kinsfolk of the dead are allowed this license.

‡ "——— should revenge themselves." Is it not possible that this may explain the fate of those who dug the grave of Alaric?

the cave, and are taken down when the bones have been deposited there. Many frightful stories are told in connection with this custom, and it is certain that not even decomposition itself avails to baulk the last revenge of cannibals if they can find the grave. The very bones of the dead chief are not secure from the revenge of those whose friends he killed during his lifetime, or whom he otherwise so exasperated by the tyrannous exercise of his power as to fill their hearts with a deadly hate. In one instance within my own knowledge, when the hiding-place was discovered, the bones were taken away, scraped, and stewed down into a horrible hell-broth—but here the narrative had better stop.

Extremely interesting traces of the former prevalence of secret burial are found among tribes who do not conceal the graves of their dead. I observed from time to time in various parts of the group certain remarkable customs with regard to the first sod turned in digging a grave; and of these customs the natives could give me no explanation other than that which is perfectly satisfactory to their own minds with regard to all practices of which they have forgotten the origin—"Our fathers did so." It was not until I became acquainted with tribes who practise secret burial, and noted the extreme care with which the surface sods were raised and set aside when the grave was dug, in order that they might be replaced with as little derangement as possible, that I came upon what seems to be the underlying idea.

Tribes, who long ago abandoned their ancient practice of concealing the grave, seem to have remembered that the sods were kept apart from the excavated soil, but to have forgotten the reason for the custom; and so they have come at length to ascribe some peculiar virtue to the first sod raised, and to do all manner of queer things with it. In some places it is laid aside until the grave has been filled up and then is kneaded into a little tower on the top of the mound. Elsewhere it is thrown in upon the corpse before the rest of the excavated earth. At Vunda, the two Ngganggáli hold it against their breasts until the body has been lowered into the grave. But the most singular custom in connection with it occurs at the burial of the Torandreketi before mentioned. When his grave is dug, the man who turns the first sod takes it up in both hands and raises it to his head. He then lifts up one foot, and resting it against the calf of his other leg, he maintains that posture until the chief is buried. The poor man may be kept thus standing for several hours, and has sometimes been unable to straighten his leg at the close of the ceremony. His friends carry him down to the waterside, bathe, and vigorously shampoo him, until the rigid muscles have recovered their elasticity.

A curious belief in connection with the burial of a chief prevails at Naitasiri, on the banks of the Wailevu, the noble river which flows down to Rewa from the mountains of Navitilevu. There the Mbouta carry the dead chief by night to his secret grave far away in the hills, and are not permitted to lay the body down until the break of day. If they reach the burial place before dawn, they must stand in silence, bearing the body on their shoulders, until the morning light begins to appear in the east, for if they lay it down "*Ena kata na nggio mai wai.*" ("The sharks will bite in the river."*)

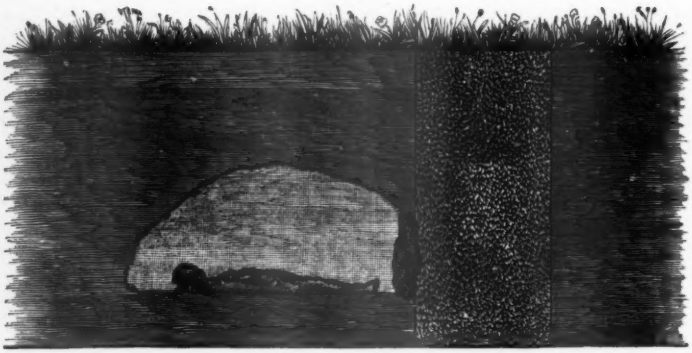
Cave burial is common in Fiji, that is to say it is found in many parts of the group, though it is not generally practised. The people of one village may be cave-buriers, while their neighbours on either side of them, and indeed all the other tribes of their island, bury their dead in graves. The dead, and sometimes the dying, are laid in caves without any covering other than the cloth or mats in which they are wrapped. At Nakasaleka (Kandavu) there is a deep rocky chasm into which the dead are thrown headlong, but only commoners are disposed of in this manner. Chiefs are treated with greater ceremony.

In all probability the practice of cave burial was far more common in the olden times. In several places where the people bury their dead in the ordinary manner, and were in the habit of so burying them when the first missionaries arrived, there are caves which are full of skeletons. A few years ago a chief named Koroivuki of Tumbou (Lakemba), was strolling along a strip of sand left bare by the receding tide at the foot of a rocky bluff. A little dog he had with him started a wild cat and pursued it. To Koroivuki's astonishment both cat and dog suddenly vanished where a stunted tree grew out of a crevice in the rock, and though he heard the dog barking he could find no trace of it. At length, pushing aside the branches of the tree, he found that they concealed an opening whence the dog's barking sounded faintly as if it came from far away. He crawled in, and found himself within an extensive cave, which, to his horror, was full of dead men's bones. His people had buried their dead in graves from time immemorial, and none of

* There are plenty of sharks in the Wailevu, but as a general rule they are not very troublesome, probably because they can easily procure fish enough to satisfy their hunger. The natives say that the sharks used to kill many people in the olden times; that they left off their evil ways when the Lotu (Christianity) came; but that since annexation they have begun to bite again. It is quite possible that the natives may be right as to the facts, whatever we may think of their theory. In the old heathen times the refuse of cannibal feasts which was thrown into the river brought the sharks up from the sea, and since annexation a butchery has been established, which has doubtless the same effect.

them were aware of the existence of the cave. The neighbouring tribe of Tarakua, however, were cave buriers, and I have visited a large double cave in which they deposited their dead.

A curious circumstance gives further evidence of the wider prevalence of cave burial among the Fijians in former days. There are tribes of Navitilevu who make artificial caves for their dead in the alluvial soil. Some dig them in the hillsides with no little care and skill, others sink a perpendicular shaft, and then "put in a side drive" as the Australian gold-diggers phrase it. This drive, or chamber, is the grave, and there the chief lies with his strangled women under him. A stone closes the entrance of the drive, and excludes the earth when the shaft is filled up. Sometimes the dying man is placed in the vault when he is supposed to be beyond hope of recovery. Food and water are lowered down the shaft, and as long as he can crawl to them and use them, so long is the shaft kept open. When they remain untouched the earth is filled in. All the superfluous soil is carried away to a distance. The surface sods—which were raised with the greatest care by the grave-diggers, and kept apart from the excavated earth—are now replaced; dead leaves, etc. are strewn over them, and all traces of the excavation are carefully obliterated. The following rough sketch shows a section of this kind of grave. It was made from the description given to me by native informants. At the time I was within easy distance of the place where the caves are excavated; the tribes living there were heathen. One of our missionaries had lately been killed and eaten, and I could not visit the place without running the greatest possible risk.



In some places, the dead man is laid out at full length, his head being supported by the *kali*, or wooden pillow, as in the foregoing sketch. But in many parts of Fiji the legs of the

corpse are drawn up, the body is doubled together until the knees touch the chin; the elbows are drawn in to the sides with the hands uplifted, and the whole body is then securely bound in that posture. This is done to prevent the ghost of the dead man from "walking" by night, and doing injury to the living. At Sambeto (north-west Navitilevu), the body is placed face downwards in the grave, "*Nde mai raici kenda ko koya*" ("Lest he should see us"). The spirits of women who die in childbirth, or before the child is weaned, are greatly dreaded, especially if the child were not born in wedlock. It is a common custom to lay upon the breast of such a woman a piece of a banana stem wrapped in native cloth, and to bury it with her. This is done to cheat her into the belief that it is her baby which she has lying on her breast. The child in the meanwhile is carried secretly to a distant town, that its dead mother may be unable to find it if she discovers the cheat. Other precautions also are taken. In some places bits of bamboo are strung loosely on a cord and fastened to the wrists of the corpse, so that by their rattling they may give warning of her approach if she takes to walking by night. Elsewhere the poor woman is buried with her *liku* or waistfringe untied, that it may fall down when she rises, and the wretched ghost may be thereby compelled to sit down again with shame and confusion of face.*

In several parts of Fiji, when an old man dies a curious custom is observed. Before the body is carried forth to the burial, it is either lifted up by the bearers or laid upon a raised platform. A man—(the brother of the child's mother)—then takes the son's son of the deceased, passes him rapidly several times hither and thither, and under and over the corpse, and then runs away with him at the top of his speed. This is done in order to bewilder the old gentleman as to the direction in which the child is taken away, it being supposed that he will be very desirous to have his grandson with him where he is, and will therefore seek to kill him. A like custom is observed when the father dies; but it is the father's father who is especially dreaded, for it is supposed that the relationship between the paternal grandfather and his grandchild is closer than that which exists between the child and its father. This idea can be clearly traced to the former prevalence of descent through females, which indeed is still the rule among some of the Fijian tribes. But this brings us into another and a far more important field of research, and a discussion of the subject would be out of place here.

At Lakemba, one of the Windward or Eastern Islands, great

* The *liku* was the sole garment of Fijian women in the heathen days.

chiefs are buried in large stone coffins, which are placed on the surface of the ground, a great heap of sand being raised over and around them. The burial of one of the Tui Nayau (Lakemba kings), which I myself witnessed, was conducted as follows:—

The body was laid out at full length upon fine mats, with the face uncovered. A lady of high rank sat by in a half-reclining posture with one arm thrown round the back of his head, her face and her whole attitude expressing the very extremity of woe. She was covered from head to foot with a large flowing *ngatu*, or mantle of beautifully painted native cloth. Four other ladies sat below her, two on each side, and continually fanned the corpse. Profound silence was kept. All work was suspended throughout the island, save the necessary preparations for the funeral. No lamentation was permitted. The *tangi ni vanua* (weeping of the land) was expressed by the subdued dolorous blare of *conchs*,* blown softly by young men who were seated on the projecting part of the mound on which the house was built. At night, rows of lamps made of cocoanut shells and filled with cocoanut oil were placed upon the mound, and on the gate-posts also of the fence which enclosed the king's precinct. In the meanwhile the grave was being prepared. Six slabs of white sandstone were cut smooth and flat with axes, and carefully fitted together so as to form a large sarcophagus, 7 feet long, 3½ feet broad, and 5 feet deep. A suitable spot near the beach was cleared, and all the undergrowth and rubbish removed to a distance. Here the lower slab was placed on the ground; the side slabs and those at the ends were set up in their places; and then clean white sand was brought from the beach, and poured down until a mound was formed about 15 feet square, and somewhat higher than the coffin, which stood in the centre of the mound. The sand was kept in its place by a strong stone wall on every side. No particle of soil was allowed to mingle with the sand, and even the stones of the outer wall were carefully washed in the sea before they were set in their places. The body was rolled up in many of the finest mats, and laid at full length in the coffin; the top slab was put on as a lid, and about a foot of sand was poured upon it. The whole surface of the mound was then levelled, and covered with little blue, green, and reddish-brown pebbles, which were brought in baskets by the women.

A singular custom, called Vakandrōndrō ("flowing," or rather, "causing to flow"), is observed at Nairai, one of the islands in Central Fiji, immediately after the burial of a young unmarried chief, or a girl of high rank who died in her maidenhood. Say that it is a chief who has lately been buried. The young men

* "Conchs."—This is the custom at Tokatoka also

and the girls bathe and oil themselves, put on their best ornaments, and then gather together in a house under the charge of certain elders. The girls lie down on one side of the house, and the youths on the other. A deep sleep falls upon them. Their souls leave their bodies, and glide swiftly away with an easy *flowing* motion. Presently they see before them the spirit of the dead chief, who is making the best of his way to Naithombothombo, a projecting point of land which forms the western extremity of Vanua Levu, and whence the spirits of the dead leap into the sea on their way to Mbulu, the Fijian Hades. The young people follow in silence, and watch. They see the ghost arrive at the overhanging rock which is the "leaping-place." He pauses for awhile, gazing intently down upon the waves. The surface of the water is agitated, and lo! the spirit of a dead *marama* rises from the depths. She ascends the face of the precipice. The two spirits embrace, leap together into the sea, and are lost to the view of the beholders, who turn reluctantly away, and go back to where their bodies are lying. As soon as they return the spell is broken. They awake from their sleep, and announce the name of the lady who came from Mbulu to meet the departed chief. This is good news to his friends, for it assures them of his deliverance from the terrible Nangga-nangga, and from other dangers. But some of the sleepers do not awake. Their souls are lingering still at Naithombothombo, consumed by a vehement longing to follow the dead all the way to Mbulu. It is necessary to shout their names aloud* in order to recall them, and not without difficulty are they at length aroused. This curious dream has all the force of reality to a Fijian who has slept that sleep, and it would be hard to convince him that it is nothing more than a dream.

But perhaps the most striking of all the Fijian burial customs are those of the Nakelo tribe who live on the banks of the Wainimbokási, one of the numerous outlets by which the Wailevu empties itself into the sea. On the death of the Tui, or king, the path through the Nakelo lands to the river boundary is weeded and swept clean. The dead chief is laid out at full length, with his narrow waistcloth carefully arranged, his club in his hand or lying across his breast, a turban on his head, and his face painted. The house is filled with people, who sit in silence and with downcast eyes. By-and-by come three old men, the elders of a clan called the Vunikalou ("source of the gods") holding fans in their hands. One of them enters the

* In fainting-fits also, and other seizures producing insensibility, the soul is supposed to have left the body. If not recalled it will betake itself to Mbulu, and so the anxious friends shout after it, bawling out the person's name at the top of their voices.

house, while the other two wait in the doorway. He flourishes his fan over the dead man's face, and calls him, saying, "Rise, sir, the chief, and let us be going. Broad day has come over the land." And the soul of the dead man rises at his call. Holding his fan horizontally at a short distance above the floor, and walking backwards, the old man conducts the spirit from the house. The other Vunikalou join him at the doorway, holding their fans in like manner about two feet above the ground, as a shelter for the spirit, who is evidently supposed to be of short stature. Thus they go along the path, followed in reverential silence by a great multitude of men, no women being allowed to join the procession. When they reach the river-bank, one of the Vunikalou climbs a tree which grows thereby, and cries with a loud voice, "*Ie Themba! Lele mai na wanka. Lui manda mai na mua vesi.*" ("Themba, bring over the canoe. Let the *vesi* end be first.") This call he repeats three times; and thereupon the people flee in all directions, and hide themselves. Themba is the Nakelo Charon, who ferries departed souls across the river. The ends of his canoe are of different woods, one being *vesi*, the best of all the Fijian hardwoods, while the other is made of *ndolo*, or *uto*, which are inferior kinds. Hence when Themba hears the *vesi* end called for, he knows it is a great chief who is coming, and makes his arrangements accordingly.

The Vunikalou, after summoning the ghostly ferryman, wait by the riverside until they see a wave rolling in towards the shore, which they say is caused by the approach of the invisible canoe. They aver that a blast of wind* accompanies it, and that the wave dashes its spray over the bank. When this sign appears, they avert their faces, point their fans suddenly to the river, cry aloud, "*Ni vondo, saka*" ("Go on board, sir"); and forthwith run for their lives, for no eye of living man may look upon the embarkation.

The spirit of the dead chief being thus conducted beyond his dominions, there remains his body only to be disposed of, and this is done with little ceremony. The grave is dug about hip deep, and the chief is laid therein, rolled up in mats, face to face with one of his strangled wives, or his mother if she were living at the time of his death, or better still, his grandmother, if she were to the fore. An old cocoanut is broken by a blow with a stone, being held so that the milk runs down upon his head. The meat of the nut is then eaten by the Vunikalou, the grave is filled up, and there is an end of the Tui Nakelo.

* "A blast of wind." Unless there were a dead calm, the Vunikalou would not have to wait long for a puff of wind at that part of the river.

NOTE.—The particulars given in the foregoing sketch by no means exhaust the subject. There are many other interesting burial customs besides those which are recorded in the Rev. Thomas Williams's valuable work; and they can now be ascertained with but little difficulty, for we are able now-a-days to make leisurely inquiries among many tribes who were inaccessible in Mr. Williams's day. With the exception of the bare statement of widow-strangling on page 137, and the mention of Nangga-nangga, I have carefully avoided the ground which he has so ably covered.

MAY 11TH, 1880.

A. L. LEWIS, Esq., *in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks voted to the respective donors:—

FOR THE LIBRARY.

From the GOVERNMENT OF NEW ZEALAND.—Results of a Census of the Colony of New Zealand, 3rd March, 1878.

From the ANTHROPOLOGICAL SOCIETY OF BERLIN.—Zeitschrift für Ethnologie, 1879, Heft. 6; 1880, Heft. 1.

From the ACADEMY OF SCIENCES, KRACOW.—Rozprawy i Sprawozdania z Posiedzeń wydzialu Matematyczno-Przyrodniczego Akademii Umiejętności. Tom. VI.

—— Lud—Serya XII.

—— Monuments Préhistoriques de l'ancienne Pologne. 1re Série, Prusse Royale.

From the TRUSTEES OF THE ASTOR LIBRARY.—Thirty-first Annual Report, 1879.

From the SOCIETY.—Journal of the Society of Arts, Nos. 1432, 1433.

—— Proceedings of the Asiatic Society of Bengal, Nos. 5, 6, 10, 1879.

—— Journal of the Royal Asiatic Society, Vol. XII, Part 2.

—— Proceedings of the Royal Geographical Society, Vol. II, No. 5.

—— Proceedings of the Royal Society, No. 202.

From the SOCIETY.—Bulletin de la Société Impériale des Naturalistes de Moscou, 1879, No. 3.
From the INSTITUTION.—Journal of the Royal United Service Institution, No. 104.
From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. VI, Nos. 5, 6.
From the EDITOR.—"Nature," Nos. 548, 549.
—— Revue Scientifique, Nos. 44, 45.

The Director read a paper entitled "Notes on the Western Regions." Translated from the "Tsëën Han Shoo," Book xcvi, Part 1. By A. Wylie, Esq.*

The following paper was read:—

FLINT IMPLEMENTS *from the* VALLEY *of the* BANN.

By W. J. KNOWLES.

I HAVE obtained at different times within the last three or four years, from the banks of the River Bann, a series of flint weapons or tools, which differ considerably in type from the ordinary flint implements of the North of Ireland. They have been chiefly found on the left bank near the town of Portglenone, in a deposit of diatomaceous clay which underlies the peat and is about five feet in thickness. The banks of the river are five feet higher than the winter level of the water, and consist of a small covering of soil, then the diatomaceous earth, and below that a clayey peat. At a short distance from the river the clay passes under a covering of peat of the ordinary kind. The clay is suitable for brickmaking, and every year during the summer months a considerable quantity of it is dug up for that purpose, and it is while this operation is going on that the implements are found.

The first flint tools of the kind I am referring to which came into my possession were purchased from a person who goes through the country districts and buys from labourers and farmers such objects of antiquity as they may find when turning over the soil, but during the last two years I have gone at various times in the brickmaking season and purchased the objects direct from the labourers.

The implements are of two types. The kind which is most numerous appears to have been made by splitting up nodules into halves and quarters, which are afterwards formed into pointed implements by a process of coarse chipping, but as a general rule they do not seem to be made from anything resem-

* See page 20 in the present volume.

bling a flake. The implements of this kind number about fifty, show no trace of polishing, and all agree in having a cutting point and thick base for holding in the hand. They are as a general rule long, narrow, and rather of a cylindrical form than flat and broad. Some of the largest are 7 or 8 inches long, and from 2 to 3 inches broad at the base, but a few are broad and flat. There is one very fine implement in the series which is flat, and only worked on one side, but otherwise it has a likeness to the flat triangular palæolithic implements. It is 6 inches long, nearly 4 broad at the base, and 1½ inches thick, while the stout base still shows the weathered surface of the nodule from which it was made. I have examined several private collections and have not found any implements that agree in character with those I have described, and very few, perhaps not more than three or four, that would have a slight likeness to them. I have also inquired of the man from whom I first bought objects of this kind, as to whether he may have found implements of this type in any other district, but he assures me he has not, and that the kind referred to were all got in the Valley of the Bann, when the brick was being made. I regularly buy flint implements from another dealer who confines his walks in search of antiquities to the eastern half of county Antrim, away from the direction of the Bann altogether, and on showing him this series of implements he declared they were perfectly new to him, and said he had never got similar implements though he had been collecting for many years. This was confirmed by my own labours as far as my experience went in collecting, from which I conclude that implements of this kind had a special connection with rivers.

Dr. Evans in "Stone Implements and Ornaments of Great Britain," mentions that he has found implements of "tongue shaped" form in Ireland which were obtained from the shores of Lough Neagh, at Toome, and which I believe to be similar in character to some of those described by me. I have also myself picked up at Toome an implement of the same type as those from the diatomaceous deposit, and I was present at an excursion to that place of the Ballymena Naturalists' Field Club about three years ago, when one or two specimens of the same type were procured by the members on the shores of Lough Neagh, where the Bann emerges from it. But Toome is only three or four miles farther up the Bann than the place I have mentioned, and as the diatomaceous deposit is found there also, I am of opinion that those implements found by Dr. Evans, myself, and others, on the shores of Lough Neagh, were derived from the diatomaceous clay by the process of denudation.

The second series of objects may be described as large flakes

of triangular outline, with sharp point and central rib down the back, but having the base wrought into a tang. In the catalogue of the Royal Irish Academy this form of flake is represented by Fig. 3; the tang, as far as I am able to interpret what is said about it, being looked on as the first step in the process of development into arrow and spear heads, but as I can also refer nearly the whole of the tanged flakes in my possession to the diatomaceous deposit on the banks of the Bann, I am rather inclined to believe that instead of being a step in the way towards greater perfection, and as pointing out the process of development, they were perfect implements of their kind, and like those of the first series, manufactured specially for use about rivers.

I have also got from the same deposit a very few—three or four—polished stone celts, and though there is something peculiar about them, as, for instance, the edge being more pointed than usual, and not of the ordinary semi-circular form, yet I am uncertain whether all may be of the same age or not. Previous to making the brick, the clay is dug out and cast into a heap, which is afterwards minced up with spades into small pieces, and it is frequently during the mincing operation that the implements are found. It is therefore not certain whether the polished and unpolished implements may have been found together in close association, or the one at the top and the other at the bottom. Any of the forms of implement may, if dropped into the water, have sunk more or less into the deposit below, but I have been assured by the workmen that some of the large unpolished implements were taken out quite close to the bottom from under 5 feet of clay.

I cannot say what the age of these objects may be as I have not been able to obtain any animal remains. If we are to accept as an acknowledged doctrine that the remains of the Irish Elk are only to be found in the marly deposit below the peat, then we may draw some sort of conclusion from the fact that these implements have been found in a bed occupying a similar position; but whatever their age may be they are none the less interesting, for if of neolithic age the fact of their being found chiefly in a river valley, and not generally where other flint implements are found in abundance, would lead us to the conclusion I have already mentioned, that they were manufactured chiefly for use about rivers; and this fact may suggest a reason for the large triangular flints of palæolithic age being chiefly confined to the old river gravels, while the implements from the caves are so different in type. These implements of the pointed kind might therefore in both cases be not for general use, but chiefly for the river valleys. They may

possibly have formed weapons for attacking the larger animals when they came down to drink, but the theory that they were used for breaking holes in ice, I think is also a very likely one. If so it would follow that the climate of the north of Ireland when these implements were used was much colder than it is at present. I believe the tanged flakes were used mounted possibly for spearing fish, as suggested by Dr. Evans, when referring to similar implements from Lough Neagh in "Archæologia," vol. xli, p. 401. But whatever the use of either kind may have been there is no doubt that they are common implements in the deposit of diatomaceous clay on the banks of the Bann, and uncommon, if found at all, in other parts of the north of Ireland where flint implements are common.

The following communications were also read:—

W. D. GOOCH, Esq., entitled "Notes on the occurrence of Stone Implements in South Russia;" "Jade Implements in Switzerland," by HODDER M. WESTROPP, Esq.; "Notes on the Discovery of Prehistoric Remains in Central Russia," by C. H. E. CARMICHAEL, Esq., M.R.S.L. Extracts from these will appear in a future number of the Journal.

On the CRANIAL CHARACTERS *of the* NATIVES *of the* FIJI ISLANDS.

By WILLIAM HENRY FLOWER, LL.D., F.R.S., P.Z.S., V.P. Anthrop. Inst., etc.*

THE Viti, or as it is now more commonly called, Fiji Archipelago, consists of two large, and a considerable number (estimated at 250) of small islands, of which about 80 are inhabited. The latter lie mostly to the east of the main islands, and nearer to the Tongan and Samoan groups. The geographical situation of the Archipelago gives it its peculiar ethnological interest, as it is placed close to the line which forms the boundary between the portions of the ocean inhabited mainly by one or other of the two great and very distinct races of the Pacific, the Melanesian and the Polynesian, using the former term for all the dark-skinned, frizzly-haired, dolichocephalic people of the Western Pacific, and the latter for the light-brown, straight-haired, brachycephalic or sub-brachycephalic race, called Malayo-Polynesian by the older writers, and for which Messrs. Keane and Whitmee have lately proposed the name of Sawaiori.

In accordance with this geographical position, as well as from observations based upon their physical characters and social condition, the Fijians have generally been considered to be a mixed or mongrel people, containing elements derived from both

* Read June 22nd, 1880.

of these essentially different races. Thus Hale says: "From the description which has been given of the natives of the Fiji group it is evident that they cannot properly be ranked with either of the two neighbouring races, although they approach nearest to that which inhabits the islands to the west of them. In colour, they are neither yellow nor black, but a medium of the two, a sort of reddish-brown. Their hair is neither woolly nor straight, but long and frizzled. In form and feature they hold the same undecided position, and however it may be in reality, in appearance they cannot be better described than as a mulatto tribe, such as would be produced by a union of Melanesians and Polynesians."*

It must, however, be noted that this description of the American ethnographer, as well as nearly all our other knowledge of the physical characters of the Fijians, is derived from natives of the smaller islands, or of the eastern coast of the principal island, Viti Levu, who have for a long time maintained an intercourse, sometimes friendly and commercial, and at other times hostile, with the neighbouring Tongan group inhabited by a pure Polynesian race, while hitherto scientific observations upon the inhabitants of the interior of either of what may be called the continental islands of the group, where the primitive characters of the people may be expected to be met with in their greatest purity, have been extremely scanty. This applies with scarcely any reserve to the osteological characters, as (with one exception) all the specimens of crania of the Fiji islanders described up to the present time have been brought from some of the smaller islands.

The precise origin of the one which was for many years the sole representative of the Fijian race in European collections, that presented to the Museum of the Royal College of Surgeons of England by Dr. Hobson, the figure of which in Martin's "Natural History of Quadrupeds, etc." (1840), has been reproduced in several anthropological works, is certainly unknown, but as it was obtained from a man who died in the hospital at Hobart Town, probably one of the crew of a whaling ship, and as its essential characters differ totally from those about to be described, it is tolerably certain that it could not have been from the interior of either of the large islands.

Dr. J. W. Spengel† has described and figured eight crania from the Godeffroy and other Museums in Germany, not one of which is known with any certainty to have been that of a native of

* "United States Exploring Expedition under Wilkes (1838–42)" ('Ethnography and Philology,' by Horatio Hale (1846), p. 174).

† "Beiträge zur Kenntniss der Fidschi-Insulaner" ("Journal des Museum Godeffroy," Band i, Heft iv, 1873, p. 239).

either of the main islands. The same may be said of the ten specimens in the Barnard Davis collection.*

In the latest exhaustive summary of our knowledge of the cranial characters of the Melanesian people, that given in the "*Crania Ethnica* of De Quatrefages and Hamy" (Livraison vii, p. 288), fifteen skulls are mentioned from the small islands, probably presenting more or less of Polynesian mixture, and one only from the interior of Viti Levu, brought by M. Filhol. This is briefly described, and is said to present in the highest degree the characters of the Papoua (Melanesian) race.

The great interest of the collection now before us lies in the fact that it contains a series of sixteen crania, of both sexes, and various ages, of Kai Colos or natives of the mountainous regions of the interior of the large island of Viti Levu. These were obtained in 1876 by Baron Anatole von Hügel, to whose promised work on the Islands and their inhabitants all geographers and ethnologists are looking forward with great interest.† With these I am able to compare a series of thirteen, seven being those of adults and six of children, from the east coast of Viti Levu, or islands, such as Ovalau, situated near to the coast. These are partly from Baron von Hügel's collection, partly from that of Dr. Barnard Davis, but mainly from a collection made by Mr. Boyd in 1879, and acquired for the Museum through the liberality of Mr. Luther Holden, President of the College. A third series, consisting of seven crania, partly from the Von Hügel and partly from the Barnard Davis collection, is derived from Vanua Balavu, one of the Lau, Eastward or Windward Islands, situated about 150 miles east of Viti Levu, and nearer to the Tongan group.

The skulls of the Kai Colos, or mountaineers of the interior of Viti Levu, being by far the most important series, will be described first. Of these, the greater number, amounting to fourteen, were obtained by Baron von Hügel in August 1876, from a cave formerly used as a burial place by the Ngalimari tribe, at Wakuku, on the Siga Toka river, in the Nandronga district, which lies towards the south-western end of the island. They form a very representative series, as far as age and sex are concerned. Eleven are perfectly adult. In one (No. 1136, Osteol. Catalogue), all the permanent teeth have been acquired, including the third molars, but the basal suture is not closed. In another, all the permanent teeth are in place except the last

* "Thesaurus Craniorum" (1867), p. 314, and Supplement to the same (1875), p. 74.

† Baron von Hügel's entire craniological collection, consisting of thirty seven skulls of natives of various islands of the Western Pacific, was purchased in 1879 by Mr. Erasmus Wilson, F.R.S. and presented by him to the College.

molars; and one is that of a young child with the milk teeth only in place. These three are not included in the measurements from which the averages are derived. Of the adults, several have the appearance of considerable age; in two the whole of the teeth have been lost during life, and the alveolar walls absorbed. In most, the ordinary characters by which the sexes of skulls are distinguished are well marked, but in two there is some ambiguity, but placing these with the sex which on the whole they most resemble, I have classed six as males and five as females.

None of them present any signs of having died other than a peaceful death, or of having been injured in any way afterwards, and this fact, with that of several having considerably outlived the vigour of manhood, as shown by consolidation of sutures and loss of teeth, affords no corroboration of the accounts of the excessive ferocity and cannibalism ascribed to these people.*

The two other skulls of Kai Colos, both adult males, are from Voresika, in the Na Drau district, and bear different evidence of the native character, having both been broken by blows from clubs in a fray with members of a neighbouring tribe.

Neither these nor any other of the Fiji crania bear any certain evidence of having been designedly subjected to any process of artificial deformation, although one (No. 1130) is unsymmetrically distorted in the occipital region, being flattened on the right side.

The crania of the Ngalimari will be first described, as they form a single homogeneous series. Nothing can be more striking than their wonderful similarity in all essential characters; this is even more marked than in the series of crania of the Andamanese, the subjects of a previous memoir.† In size there is some difference, but it would be almost impossible to find any equal number of human skulls presenting so little variation in general conformation, except such as is due to sex and age.

As before mentioned, with two exceptions, the characteristic distinguishing signs of the different sexes are strongly marked, the males being known by their superior size, the comparative thickness and roughness of their walls, and the greatly developed glabella, supra-orbital ridges, supra-mastoid ridges, and mastoid processes.

Taken all together, they may be classed as large skulls, indicating a people probably above the average stature, and of considerable muscular development. In this respect, however,

* It is possible that they may have been victims of the epidemic of measle which committed such havoc among the inhabitants of the island immediately after our annexation in 1874.

† *See* "Journal of the Anthropological Institute," November, 1879, vol. ix, p. 108.

Journ Anthropolog Inst Vol X, P 112.

Fig 1.

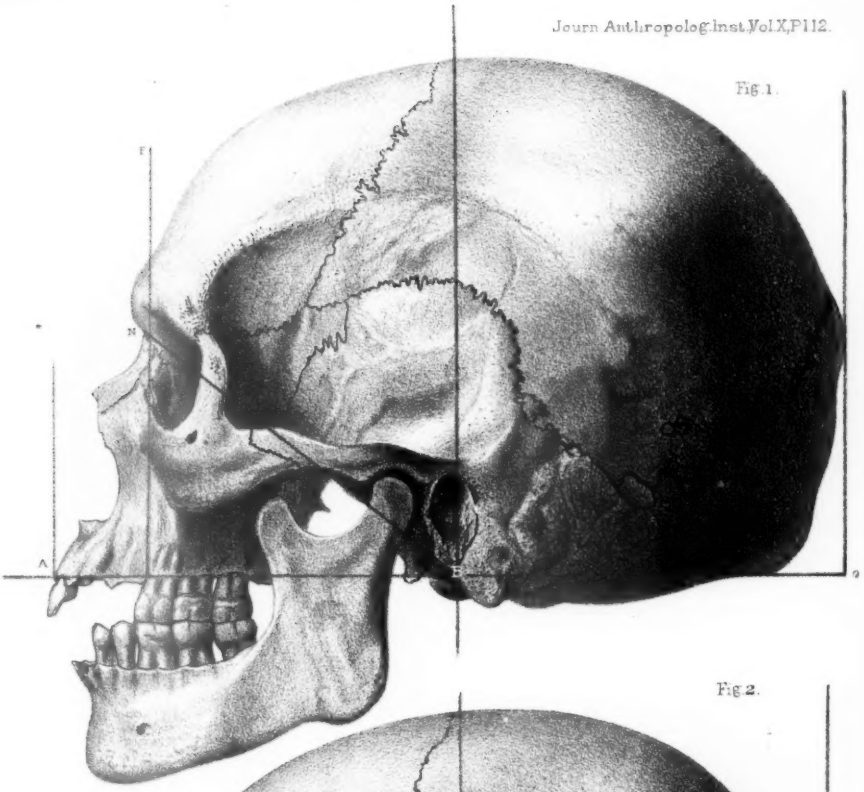
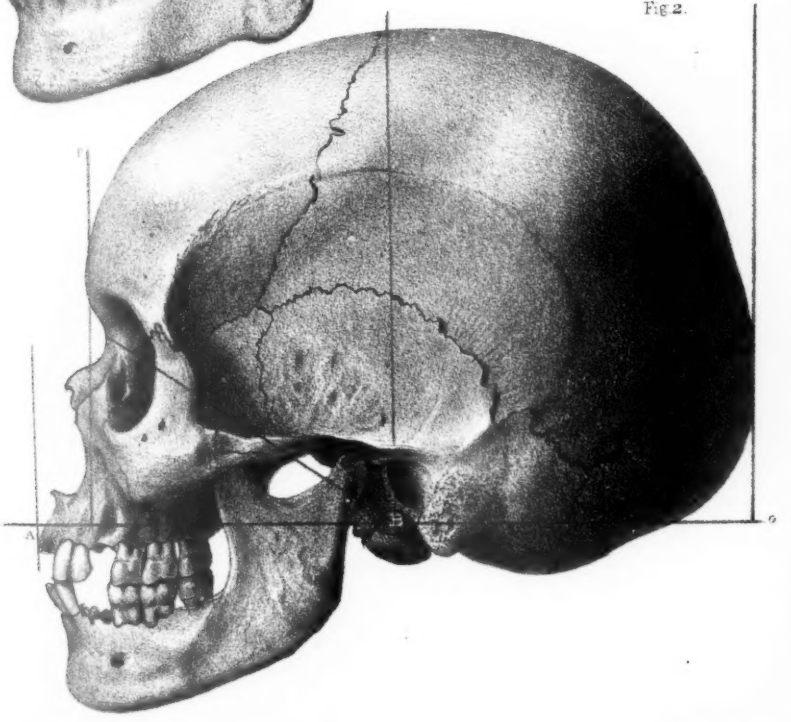


Fig 2.



J Smit lith

Harhart imp.

CRANIA OF FIJIANS. ½.

Fig. 1.

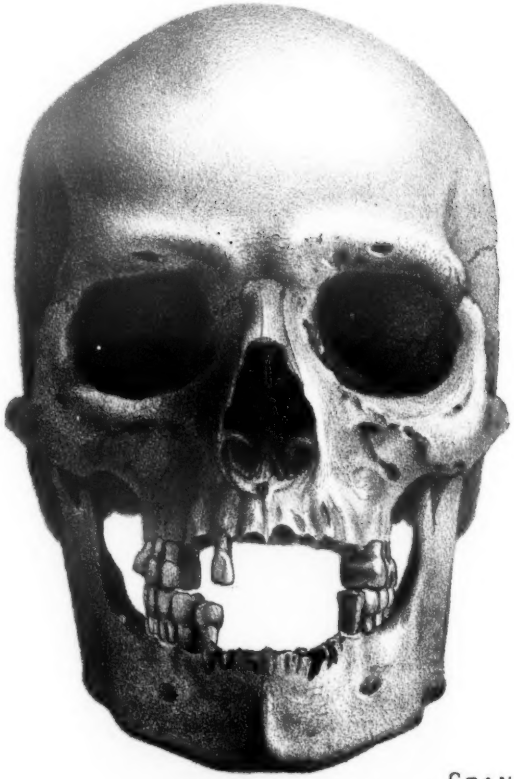


Fig. 2.

J Smit lith

Hanhart imp

CRANIA OF FIJIANS. ½

Fig. 1.

Fig. 2.

J. Smit. lith.

Hanhart. imp.

CRANIA OF FIJIANS. $\frac{1}{2}$

there is a considerable disparity between the sexes. The average horizontal circumference of the six males is 534 millimeters, that of the five females 501. The average vertical transverse circumference of the males is 434, of the females 412 millimeters. The same dimensions of the Andamanese were 480, 462, 410, and 395 millimeters.

The average cranial capacity of the six males is 1504 cubic centimeters, one being as high as 1660. The average capacity of the females is 1327, giving a ratio between the sexes of 100 to 88. This, owing to the insufficiency of the number of the specimens, is only an approximation, but it does not differ greatly from that found in other races.* The general average is very much the same as that of 138 Europeans of various nations,† and considerably above that of any other of the frizzly haired races, except the Kaffirs. It exceeds that of the Australians in the ratio of 100 to 87.

In general form all the crania belong to the most pronounced type of the class called by Dr. Barnard Davis *hypsi-stenocephalic*, characterised by their length, height, and laterally compressed wall-like sides. The *norma occipitalis* (Plate XIV, fig. 2) presents a high pentagon, the sides of which are nearly vertical, the maximum transverse diameter, usually situated near the squamosal suture, being rarely greater, and sometimes even less than the diameter between the supra-mastoid ridges.

The latitudinal or cephalic index is remarkably low, being less than 70 in every one of the series, and in one case (No. 1126) as low as 62·9,‡ calculated on the ophryo-occipital length, or 61·9, if calculated on the glabello-occipital length, the plan so frequently adopted by anthropologists on the continent. This is the lowest index of any normal cranium in the collection, being very slightly below that of a skull of unknown origin, described by Prof. Huxley,§ which so closely resembles in all important characters those now under consideration, that it might easily have been taken for one of the series. The mean latitudinal index of the six males is 65·5, that of the five females 66·5, so that 66 may be taken as representing the entire series, a far lower mean index than has hitherto been found in any race.

* *See* "Journal of the Anthropological Institute," November, 1879, vol. ix, p. 113.

† "Catalogue of Osteology of Vertebrate Animals. Mus. Roy. Col. Surgeons," Part, i, 1879, p. 254.

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§ "On two widely contrasted Forms of the Human Cranium" ("Journal of Anatomy and Physiology," vol. i, 1867, p. 60).

The Fijian mountaineers, therefore, if this series may be taken as a fair representation of the whole, are the most dolichocephalic, or more properly *stenocephalic*, people in the world.

Are they also to be regarded as remarkable for their height? Following the French school in taking the basio-bregmatic line as the most convenient measurement of altitude, we find an average of 142·7 millimeters for the males, and 137·2 for the females. This very considerably exceeds the maximum breadth in every case, and gives the average ratio of height as compared to breadth as 111 to 100. In the Andamanese, on the other hand, the height always falls short of the breadth. But these relations may depend as much upon variations of the breadth as of the height, and show nothing absolutely about the latter. In the same way the altitudinal index obtained by the usual method of comparing the height with the total length of the cranium is also fallacious, for in long skulls the height must appear less than in short ones. Thus the Andamanese by this test would appear more deserving of the epithet "lofty" than the Fijians, their altitudinal index being 77·9, while that of the latter is only 74·1, but this arises from the very short antero-posterior diameter of the former compared with the latter. A more just comparison may perhaps be made by taking the basio-nasal length as the standard. This being reckoned as 100, the average height in the Fijian is 138, in the Andamanese 136, in 25 English crania 132, in 17 Eskimo 133. More extended comparisons on this basis are desirable, but the subject will be referred to again before the conclusion of the memoir.

The contour of the roof of the cranium as seen in the *norma lateralis* (Plate XII), shows a fairly developed and rounded frontal region, passing into a very regular arched line, the highest point of which is situated rather behind the bregma, and continued into an occipital region prolonged considerably behind the external auditory meatus. Narrowness from side to side is the characteristic of every region of the cranium; even the parietal eminences form but slight projections upon the general evenness of the lateral walls (*see* Pl. XIV, fig. 1). The anterior and upper region of the parietal bones is flattened, giving an angular or roof-shape to the upper part of the skull, and there is generally a very slight diminution of convexity in the region of the obeleon; but there are none of those marked and regular depressions on the surface frequently seen in Tasmanian and other Melanesian crania. Generally speaking, the surface of the upper part of the cranium is smooth and even, though in the males the temporal ridges are distinctly visible throughout their course, and the mastoid processes are large and

rough on the surface, and the occipital ridges and inion strong and rugged. In the females the latter only form smooth rounded eminences.

The sutures are rather faintly marked in most of the crania, and generally simple in character. In four of the older skulls, partial consolidation has taken place throughout the principal sutures. One only is metopic, No. 1102, a female, but in common with the other sutures the frontal is nearly obliterated. Wormian bones in the lambdoid suture are absent in four of the crania, and in the others generally few and simple. Union of the squamosal with the frontal by means of a *processus frontalis* occurs in both sides of one cranium, and on one side in another. In all the others, the distance between these bones is very small, in no case exceeding a centimeter. An epipteric bone occurs in one case only.

As might be supposed, every one of the adult skulls is strongly phænozygous.

The well-rounded, and in some cases rather prominent though narrow forehead, ends below in a strongly marked brow-ridge, overhanging the root of the nose and especially the orbits. This is of course more pronounced in the males than the females, but is present in all, including the children, and is one of the most marked characteristics of the skulls. In most of the males the glabella is somewhat sunken between the supra-orbital ridges, and there is a depression above separating it from the forehead, but in Nos. 1128 and 1130, as well as in the females, the contour of the forehead passes almost insensibly into the glabella. The exact amount of the projection of this eminence from the forehead is seen by comparing the ophryo-occipital with the glabello-occipital length (*see* Table of Measurements). In the males it averages 2·6 millimeters, being only 1 millimeter in the two crania just mentioned, but as much as 3 or even 4 in the others, while in the females the difference is scarcely perceptible, averaging but $\frac{2}{10}$ of a millimeter.

The whole face is remarkably short from above downwards, compared with the European, or with the true Polynesian races. This is due to diminution of the height, both of the nasal aperture and of the subnasal portion of the face.

The orbits show a marked contrast in form and character in the two sexes. In the males they are oblong, with greatly thickened margins, with an average index of 84·2. In the females they are more nearly square, with thin and sharply defined edges, having an index of 90·7. In the children their form is more rounded, and in the youngest, an infant with the milk teeth only, the height is actually greater than the width, the index being 103·3. The series thus exemplifies in an extremely

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The orbits show a marked contrast in form and character in the two sexes. In the males they are oblong, with greatly thickened margins, with an average index of 84·2. In the females they are more nearly square, with thin and sharply defined edges, having an index of 90·7. In the children their form is more rounded, and in the youngest, an infant with the milk teeth only, the height is actually greater than the width, the index being 103·3. The series thus exemplifies in an extremely

striking, almost exaggerated manner, the usual variations of the orbital form, according to sex and age, which were demonstrated by Broca in his interesting memoir on the orbital index.

The nose is one of the most important of the features as a characteristic of race, and its form is very accurately indicated in its bony framework. There is a striking similarity in this region in the whole series. The aperture is large, being high, owing to the shortness of the nasal bones, and also of great width. The average nasal index of both sexes is 56·6, very much the same as that of the Australians and the African negroes in the Museum. With one exception (No. 1127, the index of which is 50·0) all belong to the platyrhine group (index above 53). The nasal bones are small, narrow at the upper end and widening below, not flattened as in African negroes, but more or less laterally compressed, and meeting at a rounded angle at the median dorsal ridge. The profile of this ridge is hollowed below the naso-frontal suture (though not so deeply as in the Australian), and then curves rather abruptly forwards, and turns slightly downwards at the tip. A nose formed upon this bony sub-structure would evidently be of considerable size, with broad alæ and open nostrils, would be sharply marked off from the forehead by a groove, and have a prominent bridge, placed high up on the dorsum, as represented in many descriptions and drawings of individuals of the Melanesian race.

The form of the lower margin of the nasal aperture is generally one of the best distinctive characters between the white and the black races of men. All the skulls of this series present the distinguishing form of the latter, *i.e.*, effacement of the sharp, elevated border, and more or less insensible passage from the floor of the nasal chamber to the anterior surface of the alveolar process; part of the floor of the chamber, concealed in the European by the border just mentioned, being visible externally in a front view of the face. Concurrently with this formation of the lower margin of the nostrils, the nasal spine is always feebly developed, usually No. 2 of Broca's scale, or smaller; never equalling No. 3.

The average naso-malar angle is 135·6, ranging between 130° and 139°, about equal, therefore, to that of the English, and showing no Mongolian affinities.*

* I find that for greater precision it is advisable to modify the definition of this angle, given in the paper on the Andamanese (J. A. Inst. vol. ix. p. 117.) Instead of "the middle of the outer margin of the orbits," a spot immediately beneath the fronto-malar suture is preferable to rest the limbs of the goniometer upon, the angle being then almost exactly in the horizontal plane of the cranium. The results obtained this way differ somewhat from those previously given. The average in 106 crania of natives of the British Islands is 135·2. I hope shortly to have made a sufficient number of observations to test fully the value of this angle as a race character.

No. in Catalogue.	Sex.	1 Capacity.	2 Length (ophryo-occipital).	2a Length (glabello-occipital).	3 Height (basi-bregmatic).	Transverse diameters of cranium.					9 Index of breadth.	10 Index of height.
						4 Minimum frontal.	5 Maximum frontal.	6 Occipital.	7 Biauricular.	8 Maximum.		
Ngalimari tribe. Nandronga district. Viti Levu.												
1125	♂	1540	197	201	146	96	107	110	117	129	65·5	74·1
1126	♂	1550	194	198	141	95	106	105	112	122	62·9	72·7
1127	♂	1530	193	196	143	99	112	110	124	134	69·4	74·1
1128	♂	1660	203	204	148	97	116	120	120	134	66·0	72·9
1129	♂	1370	194	197	140	97	112	104	113	127	65·5	72·2
1130	♂?	1375	190	191	138	98	107	111	111	125	65·8	72·6
Average...	♂	1504	195·2	197·8	142·7	97·0	110·0	110·0	116·1	128·1	65·6	73·1
1131	♀?	1350	186	186	140	94	105	108	112	123	66·1	75·3
1132	♀	1300	181	182	142	97	108	106	113	126	69·6	78·5
1133	♀	1380	185	185	137	93	109	101	114	124	67·0	74·1
1134	♀	1355	189	188	136	97	106	103	108	123	65·1	72·0
1135	♀	1250	181	182	131	89	102	102	106	117	64·6	72·4
Average...	♀	1327	184·4	184·6	137·2	94·0	106·0	104·0	110·6	122·6	66·5	74·4
Na Drau district. Viti Levu.												
1139	♂	1445	188	190	145	101	115	107	115	128	68·1	77·1
1140	♂	1500	191	193	142	93	113	106	114	128	67·0	74·3

ers of cranium.					Horizontal circumference.			Transverse arcs.				Longitudinal arcs.		
	7 Biauricular.	8 Maximum.	9 Index of breadth.	10 Index of height.	11 Preauricular.	12 Total.	13 Vertical transverse circumference.	14 Frontal.	15 Bregmatic.	16 Parietal.	17 Occipital.	18 Frontal.	19 Parietal.	20 Occipital.
	117	129	65·5	74·1	236	532	430	285	295	318	275	126	145	130
	112	122	62·9	72·7	235	521	423	286	300	315	275	135	146	122
	124	134	69·4	74·1	237	530	435	285	300	320	272	130	133	132
	120	134	66·0	72·9	254	546	463	295	310	330	288	152	142	133
	113	127	65·5	72·2	244	526	428	292	300	300	275	133	144	117
	111	125	65·8	72·6	236	518	425	293	300	316	275	133	133	132
·0	116·1	128·1	65·6	73·1	240·3	533·8	434·0	289·3	300·8	316·5	276·6	134·8	143·8	127·7
	112	123	66·1	75·3	223	505	420	280	296	317	263	130	147	116
	113	126	69·6	78·5	230	502	420	282	290	304	248	125	136	110
	114	124	67·0	74·1	233	502	410	280	292	306	252	132	142	115
	108	123	65·1	72·0	230	508	410	282	290	312	257	134	141	121
	106	117	64·6	72·4	215	488	398	260	275	292	260	120	135	112
·0	110·6	122·6	66·5	74·4	226·2	501·0	411·6	276·8	288·6	306·2	256·0	128·2	140·2	114·8
	115	128	68·1	77·1	239	518	435	292	305	310	266	135	135	120
	114	128	67·0	74·3	236	520	435	298	308	315	282	134	143	120

CRANIAL MEASUREMENTS OF NATIVES OF THE INTERIOR OF VIT

al arcs.		Of foramen magnum.		Projections (visual axis being horizontal).							Diameters of face.			
	20 Occipital.	21 Length.	22 Width.	23 Facial.	24 Anterior cranial.	25 Posterior.	26 Total.	27 Basi-nasal length.	28 Basi-alveolar length.	29 Gnathic index.	30 Bizygomatic.	31 Bijugal.	32 Inter-orbital.	33 Height of Face.
	130	35	28	20	90	103	213	110	110	100·0	144	121	28	89
	122	34	27	18	85	103	206	102	105	102·9	134	118	28	80
	132	36	29	26	83	105	214	108	109	100·9	140	123	27	87
	133	37	27	23	81	117	221	99	104	105·1	139	118	23	88
	117	33	28	—	89	100	—	102	—	—	138	119	27	82
	132	30	28	—	93	95	—	103	—	—	126	116	24	—
8	127·7	34·2	27·8	—	86·8	103·8	—	104·0	107·0	102·9	136·8	119·2	26·2	83·4
	116	34	27	—	84	97	—	99	—	—	125	106	23	—
	110	34	25	15	90	86	191	104	105	101·0	127	111	25	79
	115	34	28	18	86	94	198	96	103	107·3	123	104	25	75
	121	34	27	15	82	96	193	95	98	103·2	124	112	23	80
	112	34	24	17	87	92	196	97	105	108·2	121	106	21	84
·2	114·8	34	26·2	—	85·8	93·0	—	98·2	102·7	104·6	124·0	107·8	23·4	79
	120	31	28	24	81	100	205	104	106	101·9	133	120	27	8
	120	35	27	—	82	105	—	100	—	—	130	112	23	—

MEASUREMENTS OF NATIVES OF THE INTERIOR OF VITI LEVU.

on t.	Projections (visual axis being horizontal).							Diameters of face.							Of Orbit.			Of Nasa	
22 Width.	23 Facial.	24 Anterior cranial.	25 Posterior.	26 Total.	27 Basi-nasal length	28 Basi-alveolar length.	29 Gnathic index.	30 Bizygomatic.	31 Bijugal.	32 Inter-orbital.	33 Height of Face.	34 Height of Malar.	35 Height of Alveolus.	36 Auriculo-orbital length.	37 Width.	38 Height.	39 Index.	40 Height.	
28	20	90	103	213	110	110	100·0	144	121	28	80	27	17	70	40	34	85·0	46	
27	18	85	103	206	102	105	102·9	134	118	28	80	26	16	69	37	32	86·5	47	
29	26	83	105	214	108	109	100·9	140	123	27	87	25	17	70	42	36	85·7	54	
27	23	81	117	221	99	104	105·1	139	118	23	88	24	16	67	40	33	82·5	52	
28	—	89	100	—	102	—	—	138	119	27	82	26	—	70	39	32	82·0	48	
28	—	93	95	—	103	—	—	126	116	24	—	27	—	67	38	32	84·2	44	
27·8	—	86·8	103·8	—	104·0	107·0	102·9	136·8	119·2	26·2	83·4	25·8	—	68·8	39·3	33·2	84·5	48·5	
27	—	84	97	—	99	—	—	125	106	23	—	22	—	66	38	34	89·5	46	
25	15	90	86	191	104	105	101·0	127	111	25	79	21	13	70	38	33	86·8	48	
28	18	86	94	198	96	103	107·3	123	104	25	75	19	15	66	36	34	94·4	44	
27	15	82	96	193	95	98	103·2	124	112	23	80	22	17	65	35	32	91·4	44	
24	17	87	92	196	97	105	108·2	121	106	21	84	21	18	67	35	32	91·4	45	
26·2	—	85·8	93·0	—	98·2	102·7	104·6	124·0	107·8	23·4	79·5	21·0	15·7	66·8	36·4	33·0	90·7	45·4	
28	24	81	100	205	104	106	101·9	133	120	27	88	30	29	70	41	35	85·4	50	
27	—	82	105	—	100	—	—	130	112	23	—	27	—	69	39	33	84·6	49	

[*To face page* 160.

Of Nasal Aperture.			Of Maxilla.			Angles.			MANDIBLE.									
									Width.		Height.					Of Ramus.		
40 Height.	41 Width.	42 Index.	43 Length.	44 Width.	45 Index.	46 Facial (ophry. alv. auric.)	47 Naso-Malar.	48 Basilar.	49 Bicondylar.	50 Bigoniac.	51 Symphysial.	52 Molar.	53 Coronoid.	54 Gonio-symphysial length.	55 Height.	56 Ant. post. breadth.	57 Mandibular angle.	
46	28	60·9	—	—	—	66	130	31	123	102	34	—	72	99	67	39	110	
47	25	53·2	—	—	—	70	135	17	121	98	33	25	64	96	63	37	119	
54	27	50·0	61	67	110		137	29	—	—	—	—	—	—	—	—	—	
52	28	53·5	60	69	112	70	137	28	130	101	35	24	60	102	54	31	135	
48	29	60·4	59	67	113	—	134	29	—	—	—	—	—	—	—	—	—	
44	26	59·1	—	—	—	—	135	—	—	—	—	—	—	—	—	—	—	
48·5	27·1	55·9	—	—	—	67·5	134·8	26·8	—	—	—	—	—	—	—	—	—	
46	28	60·9	—	—	—	—	138	25	—	—	—	—	—	—	—	—	—	
48	28	58·3	—	—	—	69	139	29	—	—	—	—	—	—	—	—	—	
44	24	54·5	58	60	104	71	131	22	112	89	28	25	53	85	58	35	116	
44	25	56·8	54	64	118	70	138	22	—	—	—	—	—	—	—	—	—	
45	25	55·5	58	61	105	63	138	27	109	88	29	25	53	90	57	36	121	
45·4	26·0	57·3	—	—	—	68·2	136·8	25·0	—	—	—	—	—	—	—	—	—	
50	29	58·0	—	—	—	—	—	—	124	105	33	26	72	94	68	32	126	
49	27	55·1	—	—	—	—	—	—	119	93	31	24	66	89	65	35	128	

The malar bones are somewhat narrow from above downwards, and retreating laterally, but not to so great an extent as in the Tasmanians and Australians. A depression in the under surface of the malar process of the maxilla or "maxillo-malar notch" as it may be called, depending upon the development of the tuberosity and inferior edge of the malar bone, which is rarely found in Tasmanians and Australians, and indeed in many other races, as the Eskimo, is generally present in the Fijians, especially in the strongly-built males, though in most it is but slightly marked. The canine fossa is usually deep.

The form of the palate is rather intermediate between the parabolic and the hypsiloid, but often more inclined to the latter form. It is rarely V-shaped or hyperbolic, the form so common in the Andamanese. The index given by the measurement recommended in the French instructions is not very satisfactory, as the "points de repère," for these measurements, both length and width, are rather indefinite. The length terminates posteriorly at the palatine spine, a very variable point, sometimes greatly and sometimes but little developed, and giving no exact indication of the real length of the bony framework of the mouth, and, moreover, very often broken. The width also of the palate is very difficult to determine precisely by measurement of the internal face of the alveolar arch. I should therefore suggest using the external dimensions of this arch. The length should be taken from the alveolar point in front to the middle of a line drawn across the hinder borders of the maxillary bones (the "maxillary tuberosities" of human anatomy). This is easily measured by placing a card or a thin piece of metal across the back of the mouth, resting on each side in the groove between the tuberosity and the pterygoids. The width is best taken between the outer borders of the alveolar arch immediately above the middle of the second molar tooth. These may be called the maxillary length and width, and the index obtained from them called the maxillary index.

The following examples will show the value of this index in giving an idea of the general form of the maxillary bones. In the gorilla it is 69. In a Tasmanian, which presents in a striking degree the hypsiloid form approaching that of the Anthropoids, it is 106; in an Australian of similar form, 107. The Eskimo, which present the greatest contrast to the Australians in the form of the alveolar arch, have an index (average of 4) of 124. Ten English skulls give an average of 117, and the indices of the six Fijians whose alveolar arches are sufficiently perfect to admit of measurement, vary between 105 and 118, giving an average of 111. Their position in this respect therefore appears to be between the European and the Australian.

There now remains the very important question of the position of the upper jaw with regard to the cranium, *gnathism*, as it may be called, the variations of which in the human subject depend, as Topinard has shown, mainly upon the form of the portion of the jaw below the nasal spine; in fact, upon the degree in which the anterior portion of the alveolar process of the maxilla (pre maxilla being of course included in this term when speaking of the human jaw) recedes towards the base of the cranium, or projects forwards. Although in a refined and perfect system of craniometry it may be desirable to investigate the relations of the face, independently of its sub-nasal position, to the cranium and to separate the different elements which produce the condition generally known as prognathism, it is clear that in estimating this condition as a whole, the alveolar point is the most important for consideration, and it is the position of this point in relation to some fixed line in the cranium which has to be determined.

The best and most convenient base line of the cranium appears to me that which Huxley calls the "cranio-facial" axis, or the basio-nasal line, joining the basion (B, Plate XII) and the nasion (N); and, practically, gnathism depends upon the relation of the alveolar point (A) to this line. If any line or axis of the cranium ending in front above the nasion is used, a new element is introduced—that of the form of the frontal bone, which should be kept quite distinct, for although required in estimating the whole "facial angle," it has nothing to do with "gnathism" as was clearly shown in Professor Huxley's paper "On two widely contrasted Forms of the Human Cranium."* In what may be called the average or generalised condition of the human skull the points N (nasion), B (basion) and A (alveolar point), form a triangle of which the two sides BN and BA are equal. Such skulls may be called mesognathous. Prognathism and orthognathism consist in the advance or recession of the point A, which may be due to one of two causes, or, as is more often the case, to both combined: 1. A rotation, or perhaps rather sliding forwards or backwards of the maxillary and adjacent bones, "a shifting forwards of the centre of the palate," as Huxley expresses it. 2. Variation in the size of the maxilla itself; macrognathism being generally found in the macrodont, or large-toothed races. In comparing the skull of a gorilla with that of a man, it will be readily seen that both these causes combine to make the great difference between the two crania, strikingly seen in the immense increase of the length of the line BA over BN in the former. The amount contributed by each factor can easily be estimated by dividing the line BA at the point where it crosses the hinder

* "Journal of Anatomy and Physiology," vol. i, p. 75, 1867.

margin of the maxilla, when it will be seen that both the maxillary length and the space between the maxilla and the basion are increased. The same will be found in the black races of men, though in a far less degree. But, by whatever cause produced, the length of the line BA compared with that of BN expresses the measure of *gnathism* of the skull quite as accurately as any of the other methods by angles or indices which have been proposed, and its extreme simplicity and facility of application gives it great advantages. It fails certainly in cases of platybasic deformity, when the elevation of the basion causes it to approach nearer to the nasion; but such cases are rare, and can readily be detected by the eye, and then the method must be exchanged for some other. It fails also, but in common with all other methods, when loss of incisor teeth or other cause has led to the destruction of the alveolar point.

One other source of fallacy, which applies equally to this method of estimating gnathism, as to the angular one, in which A is taken as the apex of the angle measured (as by the French anthropologists), must also be pointed out. It is affected by variations in the height of the face (the line NA), when unaccompanied by similar and proportional variations of the length BN. Thus, of two faces of different lengths, in which BN and the angle BNA, are equal, the shorter one will appear the more orthognathous of the two. This probably does not amount to much practical importance, but if on a more extended and critical examination it should be found to do so, where rigid accuracy is required it will be necessary to resort to the angle itself, which can be calculated from the dimensions BN, NA, and AB, by the application of the principles of trigonometry.*

For the index which expresses the ratio between the lines BA and BN I have used the term "alveolar index,"† but Mr. Busk had previously proposed the more expressive "gnathic index" for one denoting very nearly the same relationship. I should very much prefer to adopt this term in future, as it is scarcely possible that the slight difference between them (Mr. Busk using the auditory meatus instead of the basion as the apex of the triangle) will lead to any ambiguity.

In the series of skulls before us only eight, four males and four females, have the alveolar margin sufficiently complete

* The angle of prognathism or premaxillary angle suggested by Prof. Huxley has its apex at the anterior termination of the basi-cranial axis, or the junction of the presphenoid and ethmoid bones, and its limbs passing the one through the basion, the other through the alveolar point. The principle is therefore the same, but practically it is not so convenient.

† "Journal of the Anthropological Institute," vol. ix, p. 119. and "Catalogue Osteology and Dentition of Vertebrated Animals," Coll. of Surgeons Museum (1879).

to afford the requisite measurements. Of these, in one (No. 1025) the basio-alveolar line just equals the basio-nasal line in length, in all the others it exceeds it. The females happen to be much more prognathous than the males, but the series is too small to draw satisfactory conclusions as to the characters of the two sexes. The general average of 103·7, shows that as a race they enter into the prognathous category,* though not to the extreme degree of the Australian or African negroes.

It has long been felt that in comparing crania one with another actual measurements are of little value unless reduced to terms of some common dimension. The great difficulty has been to find the dimension which is best suited for this purpose. Professor Huxley has suggested the basi-cranial axis (basion to upper end of the ethmo-presphenoid suture),† but this has several disadvantages. It can only be measured in a skull which has been bisected, and it is so short that small variations in its length, or slight inaccuracies in its measurement produce great apparent effects upon the resultant ratios.

In the cranio-facial axis (BN), the first inconvenience is entirely and the second very considerably obviated. There is certainly an element of variability introduced, independent of the actual size of the skull, by the inclusion of the roof of the nasal chamber, and the thickness of the lower border of the frontal bone; but putting aside occasional individual variations, this is one of the most constant dimensions of the cranium, and if not safe to apply to a single skull, will, I think, if averages of a sufficient number of specimens be taken, afford a good standard for comparison.

The constancy of this dimension, the variations having relation apparently only to the general size of the framework of the base of the skull, may be illustrated by the following table of its average length in different races:—

			Millimeters.
17	♂	Eskimo	106·1
7	♀	„	99·5
6	♂	Fijian Mountaineers..	104·0
5	♀	„	98·2
28	♂	Negroes	101·9
30	♂	Australians	101·3
20	♀	„	94·6
40	♂	Italians	101·7
20	♀	„	94·0
100	♂	British	100·9
50	♀	„	94·6
40	♂	Peruvians	100·5
16	♂	Chinese	99·0
12	♂	Andamanese	95·0
12	♀	„	90·7

* The gnathic indices may be thus divided. *Orthognathous* below 98. *Mesognathous* 98 to 103. *Prognathous* above 103.

† *Op. cit.* p. 72.

Of 100 skulls of male natives of the British Isles of various districts, and different periods of time, the range of the cranio-facial axis is between 91 and 111, but these figures are perfectly exceptional. Four-fifths of the whole number are between 96 and 106, and more than half between 99 and 103. In the examples of the length of the basio-cranial axis given by Professor Huxley, the range of individual variation appears to be quite as great, but as I said before, it is not with individuals, but with averages, that the comparisons must be made in order to obtain satisfactory race characters.

As an example of this method of investigation I have placed side by side the principal dimensions of the crania of the two groups of mankind described in this and my last communication, reduced to the terms of their respective cranio-facial axes, in order to see if any useful conclusions can be drawn from them.

AVERAGE measurements of six crania of male Fijians (mountaineers of Viti Levu) and of twelve male Andamanese, reduced to terms of their respective cranio-facial axes; this dimension (BN) being 104 m.m. in the former and 95 m.m. in the latter series:—

	Fijian.	Andamanese.
Capacity*	144	131
Length	188	176
Height	137	136
Maximum breadth (parietal)	123	142
Minimum frontal breadth	93	97
Maximum " breadth	106	117
Biauricular breadth	112	120
Occipital breadth	106	108
Total horizontal circumference	512	505
Pre-auricular circumference	231	224
Vertical transverse circumference	417	432
Transverse Arcs—		
Frontal	278	278
Bregmatic	289	300
Parietal	304	329
Occipital	266	263
Longitudinal Arcs—		
Frontal	130	127
Parietal	138	129
Occipital	118	109
Length of foramen magnum	33	35
Total vertical median circumference (excluding BN)	425	401
Basio-alveolar length	103	101
Bizygomatic diameter	131	132
Bijugal "	115	118
Inter-orbital "	25	25
Height of face	80	87
" malar	25	24
Auriculo-orbital length	65	66
Width of orbit	38	38
Height "	32	35
Height of nose	47	48
Width "	26	25

* Number of cubic inches divided by number of millimeters in cranio-facial axis.

A glance at the above table will show that most of the important differences in conformation between the two sets of crania are clearly brought out by the figures.

In the first place the general capacity of the interior of the cranium in the Fijians is larger in relation to the axis than it is in the Andamans. This is accounted for mainly by the fact that the whole median longitudinal arc from the fronto-nasal suture passing over the vertex to the basion is longer in the Fijians as compared with the axis than it is in the Andamanese in the proportion of 425 to 401. The total horizontal circumference is also larger but in a less degree (512 to 505), the preponderance being entirely in the preauricular portion, the diminution in the post-auricular circumference in the Fijians being evidently associated with the diminished width of the parietal region. From the same cause the vertical transverse circumference is less in the ratio of 417 to 432. It is interesting to note that the Andamanese brachycephalic cranium has, contrary to what is often supposed, a larger post-auricular circumference than the Fijian, in which "occipital dolichocephaly" is so strongly marked.

The relative greater length of the Fijian skull even to its own much elongated cranio-facial axis is shown by the figures 188 to 176. The heights of the two are nearly equal, while as might be supposed from the most superficial comparison of the crania, the transverse diameters are, in the Fijian, diminished in every case, but most in the parietal and least in the occipital region. The comparison of the biauricular diameters is interesting, as it shows that, quite irrespectively of the form of the upper part of the brain case, its foundation, as it were, is relatively much narrower in the Fijian than the Andamanese. The comparison of the maximum with the biauricular breadth is also instructive. In the Fijians the increase of the former over the latter is only as 110 to 100, in the Andamanese as much as 118, showing the comparative flatness of the whole side of the cranium in the Fijians. Comparison of the transverse arcs gives equality in the frontal region, preponderance in the bregmatic, and especially in the parietal regions to the Andamanese, and in the occipital to the Fijians. The longitudinal arcs of all three bones are greatest in the Fijians, but the difference is most strikingly seen in the occipital. Thus in every relation the small size of the occipital region of the Andamanese, pointed out in the memoir on the race, becomes evident by this comparison. The greater prognathism of the Fijians is seen in the increased basio-alveolar length. The relative auriculo-orbital lengths are almost identical. The bizygomatic diameters differ but slightly, but the comparative diminution of the bijugal breadth in the Fijian points to a

narrowing of the fore part of the zygomatic arch and malar bones. The shortness of the whole face of the Fijians is conspicuous, and the difference in the comparative dimensions and consequently in the form of the orbits and nasal apertures are well seen. The orbits being relatively of the same width, gain in height in the Andamanese, while in the same people the nose is higher but narrower than in the Fijians, giving proportions which are also shown in the orbital and nasal indices.

The teeth have unfortunately been lost, either partially or wholly, in all the skulls, in some cases owing to old age, but in most from having fallen from their alveoli after death. Those that remain are strong, well formed, and free from decay. They are of large size, though perhaps not equal to the Tasmanians or Australians. The upper incisors show considerable dental prognathism. The first lower molar has five distinct cusps, and the wisdom teeth appear always to have been well developed and never misplaced, as is so often the case among the Tasmanians; in the skull of a young person (No. 1136) they have taken their position in the jaw, before the closure of the basilar suture.

The two skulls of Kai Colos from Voresika in the Na Drau district, both adult males, resemble those above described in all their essential characters, as is seen in the table of measurements and indices, and so far tend to show that these characters are not peculiar to the Ngalimari tribe, but are those of the islanders generally. They do not, however, show the extremely small latitudinal index of some of the others, and they differ (especially No. 1139) in presenting a greater malar depth with a consequently better marked maxillo-malar notch. In 1139 all the teeth are perfect. In No. 1140, the four upper incisors, and the second and third upper molars of the right side, and the third upper molar of the left side have been lost during life, while all the other teeth are perfect and not much worn. The incisors may have been knocked out in some initiatory or propitiatory rite, but the loss of the molars must be from other cause.

In 1139, globular bony growths from the hinder wall of the meatus auditorius almost completely occlude the passage.

The series of skulls from the coast of Viti Levu, Bau, and the island of Ovalau, mostly from the latter place, consists of seven adults, and six in which the basilar suture is not united. In the adults the sexual characters are less marked than in the preceding, and I have therefore not separated them in computing the averages. Though on the whole presenting many essential

CRANIA FROM THE COAST OF VITI LEVU AND OVALAU.

Number in Catalogue.	Sex.	Length.	Breadth.	Lat. index.	Height.	Height index.	BN.	BA.	Gnathic index.	Nasal height.	Nasal width.	Nasal index.	Orbital width.	Orbital height.	Orbital index.
R. Coll. Surgeons 1141	♂	178	123	69·1	138	77·5	107	107	100·0	51	26	51·0	42	35	83·3
,, ,, 1142	♂	189	137	72·5	140	74·1	105	107	101·9	50	27	54·0	40	36	90·0
,, ,, 1146 A	♂	190	127	66·8	137	72·1	100	105	105·0	50	25	50·0	37	32	86·5
Coll. B. Davis 1644	♂?	193	132	68·4	139	72·0	104	110	105·8	49	25	51·0	39	34	87·2
,, 1146 B	♀?	184	124	67·4	133	72·3	98	106	108·2	47	26	55·3	39	36	92·3
,, 1146 C	♀	179	125	69·8	131	73·2	99	101	102 0	46	25	54·3	39	33	84·6
Coll. B. Davis 233	♀	183	123	67·2	129	70·5	94	101	107·4	45	24	51·1	37	32	86·5
Averages	...	185·1	127·3	68·8	135·3	73·1	101·0	105·3	104·3	42·6	25·4	52·4	39·0	34·0	87·2

CRANIA FROM VANUA BALAVU.

R. Coll. Surgeons 1143	♂	192	138	71·9	145	75·5	108	106	98·1	53	26	49·1	41	35	85·4
,, ,, 1144	♂	191	132	69·1	138	72·3	110	110	100·0	53	25	47·2	41	36	87·8
,, ,, 1145	♂	189	131	69·3	143	75·7	106	104	98·1	53	28	52·8	41	36	87·8
Coll. B. Davis 1645	♂	180	132	73·3	140	77·8	104	105	101·0	52	25	48·2	40	37	92·5
,, 1646	♂	190	144	75·8	145	76·3	103	110	106·8	53	28	52·8	40	35	87·5
,, 1643	♂	192	136	70·8	145	75·5	110	109	99·1	57	29	50·9	42	35	83·3
Averages	...	189·0	135·5	71·7	142·8	75·5	106·8	107·3	100·5	53·5	26·8	50·1	40·8	35·7	87·2

characters which show affinity with the Kai Colos, and though some could not be distinguished from them, but would well find a place even among the Ngalimari, as a series they are considerably less uniform. None of the males are so large or powerfully built as the Kai Colos. The average latitudinal index, though still very low, is somewhat greater, viz., 68·8, and in one (No. 1142) this index is as high as 72·5. One of the young skulls (No. 1141 D) has remarkably prominent parietal eminences, though in other parts of the cranium the usual narrowness prevails. Contact of the squamosal and frontal bones occur in three cases of the thirteen, in each case on one side only; in one, however, to the extent of two centimeters, in both the others only slightly. Epipteric bones are frequent (six cases) and the sphenoparietal suture is always short. One (No. 1046 A) has no trace of sagittal suture, though the other usual sutures are all open. This does not appear to be accompanied by any appreciable alteration in the form of the skull. The gnathic index varies between 100 and 108, the average being 104·3. The nasal index from 50 to 55·3, the average being 52·4. The orbital index from 83·3 to 92·3, the average being 87·2.

The last series consists of six skulls, all apparently those of males, and all adults, from Vanua Balavu, one of the Lau or Windward Islands. They are all thick-walled, heavy skulls with strongly marked muscular processes and brow-ridges. In other respects they present considerable individual variations, the latitudinal indices, for example, varying between 69·1 and 75·8. Indeed it is very difficult to describe them as a whole, as they give a decided impression of belonging to a mixed or hybrid race. Knowing to what an extent intercourse has taken place between the Lau Islanders and the Tongans, it becomes extremely interesting to endeavour to ascertain whether the modification from the pure Fijian type seen in these skulls can have been derived from this source.

For this purpose it would be necessary to establish thoroughly the cranial type of the Tongans, which, as mentioned before, is totally distinct from that of the Fijian, being perhaps the purest Polynesian. Unfortunately, I have not at hand means to do so, Tongan skulls being rare in collections in this country, but the Museum contains five crania, all probably of males, two from the Ellice Islands, two from Samoa, and one from Tonga, which agree so well in general characters, and correspond also with skulls from the same part of the Pacific figured by Dr. J. W. Spengel, that averages derived from their principal dimensions may, at all events in default of better information, be taken with tolerable safety as indicating the characters of the race whose intercourse with the Fijians of the Windward Islands may have led to a modification of the physical characters of the latter.

In the following table I have put down what appear to me the most important of the cranial indices of the four series of crania spoken of in this communication, taking for greater accuracy of comparison, the males only of each series, and arranging them according to their geographical position; the pure Fijians from the interior of the Western end of Viti Levu; next, the Fijians from the east coast of the same island and from Ovalau; thirdly, the Fijians from the islands situated 150 miles from Viti Levu in the direction of the Tonga and Samoan Islands; lastly, the inhabitants of the latter islands, probably of pure Polynesian blood. I am fully aware that each series is far too small for a satisfactory average, but the result is certainly remarkable, that in each character (and it must be remembered that these are not characters selected for the purpose, but were determined upon before commencing the comparisons; in fact, they are those selected some years ago for the Museum Catalogue, as the most important) a gradual transition is observed in passing from the first to the last series. Every departure from the type of the pure Fijian of the interior exhibited by the coast or island people is in the direction of the Polynesian, and the change is greater the nearer the geographical centre of the last named race is approached. The only exception in the whole series of figures is in the gnathic index of the mountain and coast Fijians, but this is probably due to the insufficient number of examples, the average in the first case being derived from only four.

	Latitudinal index.	Altitudinal index.	Gnathic index.	Orbital index.	Nasal index.
6 Kai Colos of Viti Levu	65·6	73·1	102·9*	84·5	55·9
7 Coast and Ovalau Fijians	69·2	73·9	103·2	86·7	51·5
6 People of Vanua Balavu	71·7	75·5	100·5	87·2	50·1
5 Samoans, Tongan, and Ellice Islanders†	82·6	78·1	98·2	92·3	44·3

It is certainly a remarkable proof of the value of the numerical method of expressing cranial characters, that not-

* Comparison with the female skulls of this series will show that this index is too low to represent that of the race.

† A very fine and characteristic skull of a mae Samoan, in the museum of the University of Oxford, gives the following indices: lat. 84·4, alt. 81·6, gnathic 98·1, orbital 100, nasal 44·1.

withstanding the limited number of specimens disposable, such striking results should be obtained.

The single skull presented to the Museum by Dr. Hobson and figured by Martin as a Fijian, differs completely from the natives of Viti Levu, and even from any of the islanders. In its broad parietal regions (index 78·2), round high orbit (index 100), diminished prognathism (index 98·2) and small teeth, it presents far greater affinities to the Polynesian than to the Melanesian type. The nose alone of all the features bears any resemblance to that of the Kai Colos, but it is still longer from above downwards, and of lower index (53·7) than the average of that race.

Of the cranial characters of the inhabitants of the second great island of the Fijian group, Vanua Levu, we at present know nothing. With regard to Viti Levu, all the evidence we possess shows that the people who inhabit the interior of the island present in their cranial conformation a remarkable purity of type, and that this type conforms in the main with that of the Melanesian islands generally; indeed, they may be regarded as the most characteristic, almost exaggerated expressions of this type, for in "hypsistenocephaly" they exceed the natives of Fate, in the New Hebrides, to whom the term was first applied.

The intermixture of Tongan or other Polynesian blood with the Fijian appears to be confined to the smaller islands, and even in these not to have very greatly modified the prevailing cranial characteristics. The idea that at some former period the Polynesians had effected an extensive settlement in Fiji, receives no support from the specimens in these collections.

It is probable that much light would be thrown upon the history of events in the Pacific Ocean, if we could obtain a sufficient series of crania from each of the islands, especially from old burial grounds. Distinguishing characteristics of conformation would be traced in each. Some of these might be shown to have arisen from mixture, in various proportions, of different races; others from slight modifications gradually becoming intensified and perpetuated by isolation. To the latter cause the Tasmanians probably owe their peculiar cranial conformation. The isolation of island communities, though in most cases far from complete, protects them to a certain extent from the levelling influences of the constant intercourse, through war and commerce, of tribes living on continents, and the study of natives of such communities may be expected to aid in solving some of the problems connected with the causes of the variations in the human species.

NOTES TO THE TABLE OF MEASUREMENTS.

For convenience of comparison, the greater number of the cranial measurements given correspond to those recommended in the "Instructions Craniologiques et Craniometriques" drawn up by Broca, and published by the Anthropological Society of Paris in 1875.

Certain cases of deviation from these instructions will however require explanation :—

1. *Capacity.* The cranial cavity is filled to the utmost with mustard seed, poured into the foramen magnum through a funnel of narrow aperture. When about half full the shaking and tapping on the sides of the cranium required to cause the seed to settle closely together is commenced, and it is continued at intervals until the cavity is quite filled. The surface of the seed at the foramen magnum is then firmly pressed with the thumb, to cause the seed to fill up the temporal fossæ. As much seed as may be necessary is added to fill up to the level of the margin of the foramen. The seed is then measured by pouring through the same funnel into a graduated glass vessel, frequently shaking and tapping the sides as before, so as to obtain a maximum of compression in each case. This method, if pursued with care, has been found by numerous experiments to give perfectly satisfactory results.

2. The length is measured from the ophryon to the most distant part of the occiput, but for the convenience of those who prefer to include the glabella, a second measurement is given from this point.

14 to 17. The transverse arcs are measured with the tape, from the spot on the ridge (posterior root of zygoma) immediately above the middle of the external auditory meatus, where it is crossed by the auriculo-bregmatic line (line from the centre of the auditory meatus to the bregma.) They pass to the corresponding spot of the opposite side over the most prominent part of the frontal, parietal, or occipital bones, as the case may be, or the bregma (No. 15.) The last corresponds with the *courbe sus-auriculaire* of Broca.

23 to 26. The projections are taken when the cranium is placed on a board, with a line representing the visual axis, *i.e.* a needle passing through the optic foramen and the centre of the anterior aperture of the orbit (fixed by Broca's orbitostat) horizontal. The cranium is regulated in this position by means of thin pieces of wood placed under the occiput. The board has a pin to receive the basion, and a scale running backwards and forwards from this point on which the measurements are

read by means of a square. The facial projection is the part in front of a vertical line passing through the ophryon (Plate XII, Figs. 1 and 2, AF); the anterior cerebral, the portion between this and a vertical through the basion (FB); the posterior cerebral, that part situated behind the basion (BO).

29. The gnathic (formerly called alveolar index) is fully explained at p. 163.

46. The facial angle is that of which the alveolar point is the apex, and of which the limbs pass through the ophryon and the auricular point respectively, taken by Broca's median goniometer.

47. The naso-malar angle is explained at p. 160.

48. The basilar angle is formed between a prolongation of the basio-nasal line and the plane of the foramen magnum, the apex being at the basion. (NBY of the "Instructions," p. 92.)

The measurements of the mandible correspond with those of the "Instructions" except that Nos. 3, 9, 10 and 12 are omitted, and one is added, the coronoid height (No. 53) being the vertical distance between the summit of the coronoid process and the lower border of the maxilla.

Description of the Plates.

All the figures are from specimens in the Museum of the Royal College of Surgeons of England. They are drawn on a geometrical projection, the outline being traced by means of Broca's stereograph and then reduced one-half. The plane of the visual axis (a line passing through the optic foramen and the centre of the anterior aperture of the orbit) is horizontal in the figures in Plates XII and XIII and Fig. 1 of Plate III, vertical in Fig. 2 of Plate XIV.

The numbers refer to the catalogue of the Osteological specimens (1879.)

AO, Line parallel with visual axis passing through the basion. The perpendiculars to this line at A, F, B and O, divide the different segments of the cranial projection. AF, Facial; FB, Anterior cranial; BO, Posterior cerebral.

BN, Basio-nasal line (cranio-facial axis); BA, Basio-alveolar line.

Plate XII.—Side view of skull.
Fig. 1.—Male, No. 1127.
Fig. 2.—Female, No, 1134.
Plate XIII.—Facial view of skull.
Fig. 1.—Male, No. 1127.
Fig. 2.—Female, No. 1134.
Plate XIV.
Fig. 1.—Upper surface, Male, No. 1126.
Fig. 2.—Posterior surface of the same.

DISCUSSION.

The PRESIDENT inquired whether these Fiji mountaineers with large heads of hair being pure Melanesians, would, in Prof. Flower's opinion, go against the common view that the mop-headed Papuans owe their peculiarity of hair to mixtures between Malay and Melanesian. He remarked that though Prof. Flower treated the cephalic index as only a subordinate cranial character, he practically showed it in the case of these most dolichocephalic people to be a most valuable race-mark. He called the attention of the meeting to the interesting series of cranial measurements, where four sets of indices in a crossed race showed intermediate dimensions between the two purest races, which as a reduction of hybridity to measurement was a most instructive result, never previously equalled.

Dr. ALLEN THOMSON expressed the pleasure with which he had listened to Prof. Flower's interesting description of the series of Fiji skulls exhibited to the Institute for the first time, in which the Professor continued his able and accurate application of the newer methods of craniological examination and description to the distinction of the races of mankind, as inaugurated by Broca and others, and in connection with which Prof. Flower from his intimate acquaintance with the subject, and his unrivalled opportunities, was enabled to make important contributions to ethnological science. Dr. Thomson had never before seen such remarkable examples of Dolichocephaly, without scaphocephalic difformity, as were presented by these skulls, and could not help regarding them as indicating a distinctive race or family character. Dr. Thomson congratulated Prof. Flower and the Institute on the recent acquisition by the Museum of the Royal College of Surgeons of Dr. Barnard Davis' rich collection of Crania and Skeletons belonging to different races, from which, notwithstanding the large amount of intelligent work bestowed upon it by its former possessor, new and useful information may be confidently expected in its association with the collection of the College from the investigations of Prof. Flower.

The ETHNOLOGY *of* GERMANY.—PART V.

THE JUTES AND FOMORIANS.

By H. H. HOWORTH, Esq., F.S.A.

IT is the almost invariable result of taking a new step in ethnology as in other sciences, that we are obliged to modify considerably our views along the whole line. The fresh vantage that we gain enables us to see that what was formerly held as

indisputable, is based upon very frail evidence indeed, and we are constrained to alter our picture accordingly. This makes it very important that we should make sure of every step.

In a former paper I have argued that the accounts of the settlement of the Saxons on the English coasts, as contained in the Anglo-Saxon Chronicle, are for the most part as fabulous as the story of Romulus, and that far from their having come here in the middle of the fifth century, and settled as conquerors, that they came at least a century earlier, and that they settled here largely as colonists. Since I wrote that paper I have met with other evidence which had previously escaped me, and which all tends to strengthen the view there put forth.

Prosper of Tyre, who wrote a Chronicle which reaches from A.D. 378 to 456, tells us expressly that in the 18th year of Theodosius, *i.e.*, in A.D. 441, Britain, after suffering from many previous attacks, submitted to the Saxons. "Brittaniæ usque ad hoc tempus variis cladibus eventibusque latæ, in ditionem Saxonum rediguntur." ("Mon. Hist. Britt.," lxxxii). This is quite inconsistent with the usual date of the Conquest as given by the Anglo-Saxon Chronicle and by Bede.

Constantius, Bishop of Lyons, who flourished during the fifth century, and wrote a life of Saint Germanus, and may be accepted as a contemporary witness, describes how his hero, on his visit to Britain, which took place, as we know from Prosper of Aquitaine, in 429, led the Britons against the Picts and Saxons, in the famous Hallelujah victory. This also is many years before the date generally received for the invasion of Hengist and his people, and if the site of the battle is to be identified, as Ussher and others argued, with Maes Garmon, near Mold, in Flintshire, then the Saxons were not only in Britain, but had also penetrated into its very recesses.

These two authors were actually contemporaries of the facts they relate, and their evidence is of immensely greater value than Bede or the compilation of the tenth century, which goes by the name of the Anglo-Saxon Chronicle.

I have shown how many of the names in the latter narrative are formed out of names of towns; but another fact in the record makes us see what an artificial and untrustworthy narrative it is. Lappenberg, with his usual acumen, was, I believe, the first to draw attention to this. He says the events in the Saga of the Aescings, or founders of the Kingdom of Kent, take place in an eight times repeated cycle of eight years, and adds, "If so many traces of fiction did not betray a poetic source from which these meagre chronicles derived their narrative, yet must those numbers awaken suspicion," etc. (*Op. cit.* 77.)

Thus in 449, Vortigern invites the Angles to Britain. In

457 the Britons fought against the invaders at Crecganford. In 465 Hengist and Aesc fought with the Welsh at Ebbsfleet. In 473 they again defeated the Welsh. In 488, 40 years after his arrival, *i.e.*, five times 8 years, Hengist died. Aesc then reigned 24 years, *i.e.*, three times 8. (Anglo-Saxon Chronicle, *passim*). From this point, for 80 years, we hear nothing of Kent, save of the succession of the three kings, "Octa or Ocha, the son of Eric or Æsc, Eormenric and Æthelbert, who is named in 568; he reigned 48 years, and his successors, Eadbald and Earconbehrt, each 24." (Lappenberg, 75.)

Similarly, Ælla is said to have landed in 477, and to have fought with the Welsh in 485. Such artificial numbers show how purely conventional the chronology is. But it is more than conventional, it is inconsistent with itself. Thus, Bede gives us both the year 449 and 459 as the beginning of the joint reigns of Marcian and Valentinian, the former in his History and the latter in his Chronicon, the right year being 450; and yet this is the crucial date of his chronology, for he tells us the Saxons landed during their reign. If it was during their reign, as he asserts, and as the Chronicle, following him, also asserts, it was clearly neither in 448 nor 449, but in 450, or one of the seven succeeding years. But the fact is, that the date 448 is a purely artificial one. As Mr. Skene has argued, it is founded on an erroneous construction of a passage in Gildas (who apparently puts the arrival of the Saxons after the third consulship of Aetius, which was in 446), and a manipulation of the story of Constantius, about the Hallelujah victory over the Saxons, which Bede understands as of the second visit of Germanus, while Constantius clearly refers it to the first. This date of Bede's is therefore of no value, and it is the cardinal date upon which the artificial chronology of the Anglo-Saxon Chronicle has been based.

Now, in the "Historia Britonum," which in its earliest shape was probably not later than Bede, but, as I believe, earlier, we have three different dates for the arrival of the Saxons, the latest of which is 428. This date occurs only in the Harleian MS., which was written in 954. There we are told that Vortigern began to reign in the joint consulship of Theodosius and Valentinian, *i.e.*, in 425. Four years after this, and in the consulship of Felix and Taurus, *i.e.*, in 428, the Saxons first arrived. This date seems to me to be clearly deduced from Constantius, and to coincide with that of the Hallelujah victory, and the first mission of St. Germanus, nor does it occur in the other copies of the Historia Britonum. The next date is apparently based on British traditions. In this we are told that from the first year of the arrival of the Saxons to the fourth year of King Mervin was 429 years. This entry is as old as the edition of the

"Historia Britonum," published in 821, which was the fourth year of King Mervin, and thus puts the Saxon invasion in 392, which as Mr. Skene, to whom I owe a great deal of my matter as to these dates, says, corresponds well with the oldest Welsh chronological tables, and that preserved in the Red Book of Hergest, a MS. of the thirteenth century, which says that from the reign of Vortigern to the battle of Badon was 128 years. As the "Annales Cambriæ" put the battle of Badon in 676, this puts the beginning of Vortigern's reign in 388, and the arrival of the Saxons, four years later, in 392.

A third date given in the "Historia Britonum," not reconcileable with the last, is 374. We are told that Vortigern invited the Saxons in the 347th year of Christ's passion, and while Gratian and Æquantius were consuls. This answers to 374. I quote these dates as showing that neither in the British nor the Saxon traditions were there any fixed points upon which to hang the chronology, so that the early dates in the Anglo-Saxon Chronicle are as valueless as the statements of fact.

We have no alternative after this criticism but to reject that work altogether, as an utterly worthless testimony in regard to the settlement of the Saxons on the south and east coast and to adopt the position maintained in a previous paper—that they settled there at an earlier date, and peaceably. They apparently became faithful adherents of the Emperors who ruled in Britain. The last Imperial coins struck in the Island were aurei of Maximus (A.D. 383–388), with the monogram of London, of which a specimen may be seen in the British Museum. The next coins we have are certain gold coins with a head on the obverse, apparently fashioned on the model of these coins of Maximus, and with a blundered legend that is not legible. These have been found on the south coast, and one of them at Lympne, one of the stations of the Saxon shore. They seem to show that on the withdrawal of the Romans, the people there continued the previous coinage after a rude fashion. It would seem from the statement of Gildas, if we are to credit it, that the invitation to Aetius sent by the distressed Britons, was sent by the cities of Britain, which also points to the probability of there not being any reguli or chieftains among the maritime Saxons at this date. They had in fact become incorporated with the empire.

If we pass from the testimony of external witnesses to internal evidence the same conclusion is abundantly supported. Thus the districts peopled by the Saxons in South Britain, where as I argue they settled as colonists and not as conquerors, are marked by a very well distinguished dialect, whose boundaries can be traced with considerable minuteness. This dialect has certain idiosyncracies of its own. It is not so

nearly allied to the mother tongue of both, the Friesic, as its northern sister the Anglian dialect of Mid and East Britain. It bears the marks of having been softened and altered by contact with a foreign race, and I have no hesitation in assigning its peculiarities to the fact that the Saxons where it is spoken were largely mixed with the indigenous Romano-Britons, and that both in blood and language they were accordingly much corrupted. This is confirmed by the evidence of the Kentish and West Saxon laws; where the Wealh or Læt were the class of tenants who were neither free nor slaves answer to the same class in Lower Saxony where they represented the Thuringians who were conquered by a race of kindred origin, and therefore not reduced to slavery but made into leaseholders. These Wealhs or Læts I believe represent the Saxons of the old colonisation under the Romans, who were conquered by later invaders; I shall have much to say of the class in a future paper. In a learned work by Mr. Coote on the Romans of Britain there are a number of additional facts cited which are very interesting for the purposes of this discussion. In speaking, for instance, of the Anglo-Saxon dialect he says:—"It had and has a sound always unknown to the whole of Germany and Scandinavia, the sound represented in our alphabet by the letter W . . . . It was the living sound of the Roman consonant V, the digamma of the Aeolians. . . . The Romans so impressed upon the vernacular of the Belgic coloni and proletariate the rich broad ring of the digamma that it has never since left our island. Neither Anglo-Saxon nor Dane, Norman nor Gascon could weaken or efface its masculine echo. The Belge continued true to his Roman teaching, and pronounced his own Venta and Vectis, Went and Wight. The Roman vinum and vicus were still to him wine and wic. Even the rude god of the Anglo-Saxons became Woden, as in the two heroes of their folk-lore, Weland and Wada, vicings became wicings, Saint Valery became Saint Walery, Guillaume was Wilhelm or William," etc. (*op. cit.* 33-36). Mr. Coote, already cited, has published the following most interesting and instructive list of Anglo-Saxon words which are of Latin etymology and prove, as he says, that Anglo-Saxon was a language spoken at one period by a Germanic nation conversant with the Romans.

Adfinie	adfinis (an agrumensarial term).
Æbs	abies.
Amber	amphora.
Ampulle	ampulla.

Ancer	anchora.
Cafestre	capistrum.
Camp	campus.
Candel	candela.
Carcern	carcer.
Carene	caræum.
Ceastl, Castel, Castello	castellum aquæ.
Cawl	caulis.
Ceaster	castrum.
Cerse	cresco, crescere.
Cirse	cerasus.
Cisten	castanus.
Cluse	clausum.
Coc	coquus.
Col	collis.
Corte	cohortis (cohors.)
Cordher	cohortis (cohors.)
Culter	culter.
Cycene	coquina.
Cye	culeus.
Cyse	caseum.
Cyste	cista.
Denim	damnum.
Disc	discus.
Dol	dolus.
Earce	arca.
Ecede	acetum.
Ele	oleum.
Eln	ulne.
Fæmne	fæmina.
Fan	vannus.
Fic	ficus.
Finie	finis.
Forc	furca.
Fos	fossa.
Fonte, Funte	fons fontis.
Getrum	turma.
Gimm	gemma.
Hænep	cannabis.
Ince	uncia.
Læne	linea.
Lin	linum.
Lodh	lodix.

Lyswe	læsio.
Mangere	magnarius.
Meowle	mulier.
Mere Mare	merus.
Mil	mille for mille passuum.
Miln (a mill)	molinum.
Mortar	mortarium.
Mul	mulus. / mullus.
Mynet	moneta.
Mytle, mytla	modius.
Ortgeard	hortus.
Ostre	ostrea.
Pall	pallium.
Pending	pends pendere.
Peppor, pipor	piper.
Pic	pix.
Pil	pila.
Pise	pisum.
Port	portus / porta
Profian	probare.
Pund	pondo.
Pyrige	pyrus.
Pyt	puteus.
Scale	scala.
Sceacere	exactor (bubutorum.)
Segn	signum.
Sester	sextarius.
Spata	spata.
Spyrta	sporta.
Steor (bord)	dexter.
Stræt	strata.
Sweot	secta.
Symbel (banquet)	symbola.
Syrf	sorbus.
Tæfel	tabula lusoria.
Tæppere	tabernarius.
Tigol	tegula.
Torr	turris.
Wallerwente	valorem æquantes.
Weall	vallum.
Wench	ancilla.
Wic	vicus.
Villa, wella	villa. (*op. cit.* 36-40.)

Mr. Coote, in speaking of this list, well says that these Latin words are survivals only, which in the tenth and eleventh centuries still made head against the rising flood which had submerged a larger vocabulary. (*Id.* 41.)

This evidence again is amply supported by that of archæology. The wide district peopled by the Saxons as distinguished from the Angles is marked by very curious archæological facts. It is over this district that we find those circular brooches with inlaid pastes and stones of which similar ones are found in Teutonic graves along the Rhine, as may be seen in the splendid collection at Mayence. In this district of South Britain may be seen also a series of gold ornaments fashioned in a different style and of much more elaborate workmanship than those of the Anglian districts and which point to their having been inspired probably by Roman models. The evidence therefore is overwhelming that the Saxons were in South Britain much earlier than the accounts of the Anglo-Saxon Chronicle would have us believe, and that they were settled here as colonists. This conclusion naturally throws immense doubt on the narrative in the Chronicle and makes us inquire more closely into its structure. I showed in the former paper how clearly fabulous the account of the foundations of the kingdoms of the East Saxons and South Saxons, as told in the Chronicle, are. I may add that in the "Historia Britonum," to which I shall refer at greater length presently, not only is nothing said about independent dynasties in these two districts, but we are expressly told that both of them formed part of the country granted by Vortigern to Hengist (*vide infra*). I shall therefore postulate in future that "the Saxon shore" was inhabited by Saxons probably from the time of Carausio or Carauseo (as he is called by Aurelius Victor). His name seems to be connected with that of the Cæræsi to whom we referred in our paper on the Germans of Cæsar. That he belonged to the Continental Menapia is made clear by the statement of Eumenius, that he invited the Franks to invade Batavia, which they occupied, he tells us, under the sanction of its quondam alumnus.

In confirmation of the theory that he planted the Saxons on the south coast may be added the tradition in the Brut that he did the same with the Gwyddel Fficht in the north of the island. (Herbert Brittania, after the Romans 9-11.) These Saxons were doubtless planted, as the other Germans were elsewhere, on the borders of the empire as "læti," or military colonists, and they were doubtless under the command of their own leaders. As Mr. Coote says, it was the settlement of certain chiefs with their "comites." He adds that the Batavians, who at an early period entered the military service of the empire,

at all times insisted and obtained that they should be led by their own notables . . . . and we are told by Ammianus Marcellinus, himself an old soldier, that this was the general practice under the empire in the case of all the cohorts of Goths and Teutons engaged in the service of Rome. (*Op. cit.* 31, 16, 8. Coote, "Romans of Britain," 209.)

Not only have the Britons left their traces in the archæology and dialect of the southern part of the island but also in its topography; Kent was the old name of the district before the Saxon invasion; Berks preserves for us the name of the Bibroci who lived in the district before the Romans arrived; Cashio, a hundred in Hertfordshire, is a record of the Cassi; London and the many town names compounded with Chester and Street are similar proofs.

The tenure of gavelkind is another instructive proof of our contention. It is a word derived no doubt from the Welsh "gavæl," a holding, and thence passing as "Gabelle" and "Gavellum" into French and Franco-Latin, and adopted also by the Saxons in the word "gafol," a tax, which is not found in the other Teutonic dialects (Robertson, "Scotland under her Early Kings," ii, 266). This tenure with its attendant consequence of the youngest or hearth child succeeding to the homestead, probably survived from the days before the settlement of the English. The corresponding tenure of Borough English, perhaps was derived from the same source. It is curious that out of 319 manors enumerated by Mr. Corner in which this custom prevailed, 136 were in Sussex, 53 among the East and Middle Saxons, and 96 in East Anglia, all districts of the Littus Saxonicum, while there were only 12 in Wessex, of which nine were in Hampshire, the remaining 23, save a solitary one in Kent, being scattered over Mercia or along the frontiers of Wales (Robertson, *op. cit.*, ii, 268).

Another important fact, proving that there was no violent displacement of the old inhabitants, but a gradual colonisation by the new comers, is mentioned by Mr. Wright. "It seems certain," he says "that in some parts, especially in some of the cities, the transition from Roman to Saxon was gradual, and that the two races mixed together. At Canterbury, Colchester, Rochester and other places, we find Roman and Saxon interments in the same cemetery: and in the extensive Saxon burial-ground at Osengal, in the Isle of Thanet, a Roman interment in a leaden coffin was met with. The result of the discoveries which have been made in the researches among the Saxon cemeteries, has been to render it more and more probable that the Saxons were gradually gaining a footing in the island before the period at which the grand invasions are understood to have

commenced." This opinion from so accomplished an archæologist is of the highest value in this controversy.

Since writing the above, I have received the following communication from Mr. Keary, which I think so valuable in this discussion that I have incorporated it:—"What then is in sum the evidence upon this question which a study of the numismatic history of the time has afforded us? Our examination of the various codes of the Teutonic continental nations has led to the conclusion that among all those German people who had remained near the borders of the old Roman Empire, and had not shared in the movement which hurried the brother nations away from their early homes into France and Spain, and Africa, and Italy, there had been preserved unbroken the tradition of a silver currency. Tacitus, in the first century, noticed the preference of the German people for old and well-known types of Roman silver coins; Mommsen tells us, from the evidence of finds, that in the general debasement of the currency which marked the third century, the pure silver money fled and hid itself in Germany; and now in the seventh and eight centuries the Teutonic codes show us the Germanic nations of the border still in the use of silver coins, and when with Charlemagne, German influences become paramount in France, the change is marked by the substitution of a silver for a gold coinage. By the help of the information gleaned from the laws we are able to show a sort of ring round central and southern France, comprising the districts in which, before the time of Charles, silver had remained the standard metal. The circle took in the Alemanians and some of the Bavarians; it took in Ripuaria and the north of Francia proper (where in the west were long settled the Saxons of Gaul), and a part at least of Frisia, but it left out Old Saxony, and most certainly never approached the Cimbric Chersonese. These lands lay beyond the region of a currency of which the silver region was as it were the penumbra.

"Do we continue our circle, it takes in the portion of England opposite to the *silver coasts* of France and Holland, and we should say *primâ facie* that *had* this district, too, been from early days German, as the land of the Ripuarians and Frisians was, and similarly the land of the Saxons in Gaul, the tradition of a silver currency would, in like manner, have been preserved. But we should have no reason to expect anything of the sort had the inhabitants of this land not been of Teutonic blood; if they had been as fully subjects of the Empire as the Britons were. We should, too, assert with some confidence that if this country had undergone a sudden and utter revolution between, say, the days of Constantine and the date of the

appearance of the earliest Saxon coins, if the older inhabitants had been all driven away or put to death by strangers to them, and to all their civilisation, then no tradition of a currency would have been handed on from the days of Carausius or Constantine to the days of Ethelred of Mercia or Ethelberht of East Anglia. Now what are the facts? Not only have we evidence that just the region of the old "Littus Saxonicum per Britannias" is the region of the earliest silver coinage of England, and that when we pass beyond this district (in one direction at any rate*) no silver coinage appears for at least a hundred and fifty years, but we have much stronger evidence than in the case of the continental nations we found for the continuance of a traditionary currency. In the first case, we argued upon the fact of the silver having been found current just in the regions where we might expect to find it: here not only is this the case, but the *types* of the earliest Saxon coins are found in a vast majority to imitate bygone Roman types. And we have clear evidence that Roman coins were preserved and copied as late as Ethelberht of East Anglia (793).

"It is of course *possible* that the Saxons and Angles coming from a land which knew not a coinage, and without holding any communication with the Britons, found as it were by accident some Roman coins, and constructed a monetary system in imitation of these. This was the older theory, so far as any theory of the origin of the sceattas had been formed. But what a chapter of accidents it involves! How curious it is that the discovery was confined to certain regions of the land,—just those regions where according to other evidence the old Saxon colonists must have lived! How strange that the same fortunate discovery was never made in Wessex! How strange, again, if the use of silver money sprang up thus suddenly among the Angles and Saxons of the East, that it was never communicated to their brethren of the West! Or if this be partly accounted for by the supposition of a frequent communication between the opposite coasts of England and France, why were the types of the English coins not taken from those which were in use upon the Continent?

"This army of difficulties melts away if we put in the place of the popular view of the English invasion the more reasonable theory of an old Saxon settlement on some of the coasts of this land, substitute for the old theories or no theories of the origin of the sceattas the supposition of a continued use of silver money among the Saxon settlers, handing on the habit of a

* Into Wessex. Beyond the northern limit, *i.e.* in Northumbria, the currency was of copper. The locus of the early silver coins, the *sceatta*, is from the Southampton Water to the Wash.

currency from the time of Carausius to the time when the sceattas were first coined.

"It takes a long time for a people to become thoroughly familiarised with a coinage; once they have done so, it takes as long to make them abandon it. If Tacitus found the Germans still using consular denarii, we need not be surprised that the silver money of Carausius—coins of the palmy days of the *littus Saxonicum*, should have continued in circulation for many hundred years, when the civilisation of Rome had withdrawn from our coasts, and 'the dark cloud which had been cleared by the Phœnician discoveries, and finally dispelled by the arms of Cæsar, again settled down upon the shores of the Atlantic, and a Roman province was again lost among the fabulous islands of the ocean (Gibbon). In the thought of this decay, we see no difficulty in understanding why, when the Saxons came to supplement the decreasing numbers of the Roman coins by a manufacture of their own, they were only able so rudely to imitate the original types.'"

It is curious in regard to the Littus Saxonicum to which we have made such frequent reference in this paper, that the jurisdiction of its towns is still preserved in that of the Cinque Ports —another proof of continuity with Roman times.

Having examined the first wave of Saxon settlers along the southern and eastern coasts of Britain, let us now turn to the second. This brings us face to face with another difficulty, namely, the relationship of the Jutes. The story or Saga of Hengist and his followers has come down to us in three different forms. It is told in great detail in the "Historia Britonum," in less detail by Bede, and in a fragmentary fashion in the Anglo-Saxon Chronicle. I have already dissected the chronology of the last two authors, and shown reason for believing it to be quite arbitrary. I have no doubt, further, that their accounts have been drawn from the "Historia Britonum" or the source whence the latter was itself derived. As I have said, the earliest recension of the latter work is certainly as old as the time of Bede, and, as I believe, even considerably older. The account of Bede is merely a truncated version of that in the "Historia Britonum," and seems to me to bear the evidence of having been composed from it; while that of the Anglo-Saxon Chronicle, as I have shown later on, only differs from it in the substitution of one synonym for a locality for another, and in the conversion of what were palpably Saxon defeats into victories. My conclusion, therefore, is that the "Historia Britonum" is the best, fullest, and earliest recension we have of the Saga. The next point that we must consider is as to its historic value. I confess that it seems to me to bear palpable evidence of its

being authentic. It has, no doubt, been interpolated and altered in the version of Mark the Hermit, which apparently became the mother MS., but in the main it contains, as I believe, a faithful record of the tradition, and is of great value.

The scepticism of Kemble, based upon the occurrence of two such names as Hengst and Horsa, is not reasonable. Why should these names be more mythical than Ursus and Lupus among the early Gallic bishops, or as Dr. Simpson has said, than Drake and Hawkins among English navigators, or Wolfe and Lyons and Horsman among other English notables? It would surely go hard with Columbus if this form of criticism had any value, for we are expressly told by his son Ferdinand, that "he took the olive branch and oil of baptism across the ocean;" figures, no doubt, suggested by his name Columbus, derived from Columba, a dove; moreover, as Dr. Bosworth has shown, the names Hengst and Horsa still survive, and are in use among the Frisians. As to there being joint leaders of the expedition which has also been made a ground for scepticism, it is forgotten that this was the usual way in which piratical expeditions were led in early days. Ivar and Ubba, Ivar and Olaf the White, Ivar and Halfdene, Biorn and Hasting, Godfred and Sigfred, are some instances from Norse times; Ibor and Ayo among the Lombards, from earlier legends.

I have no hesitation therefore in accepting the Saga of Hengist as in the main a truthful narrative, and as standing on quite a different footing altogether to the accounts in the Anglo-Saxon Chronicle about the South Saxons and the East Saxons. The genealogy of Hengist, which has been so amply and curiously preserved in the British narrative of the "Historia Britonum," seems to me to be also of high authority, but we are not confined to one narrative in our criticism of the history of these dark times, and can gather glimpses of light from other sources.

The name Jute is probably not of very old date and was not improbably derived from Geata, the eponymos of the race, as the Kentish Royal House calls itself that of the Aescings, that of Denmark the Scioldings, of Sweden the Inglings, etc., from similar eponymi. It is quite clear from a number of considerations that it was a synonym for Frisian, and that Jute and Frisian in fact connoted the same people. Thus while Bede divides the English race into Angles, Jutes, and Saxons, Procopius, who lived much nearer the time and in the sixth century, divides them into Angles, Saxons, and Frisians.

Hengist, the leader of the Jutes according to Bede, was descended, according to the genealogies both in the "Historia Britonum" and the Anglo-Saxon Chronicle, from Fin the son of Folcwald the son of Geta. Now, Fin the son of Folcwald is

named in the Traveller's song and is there distinctly called Fresna Cynne," of Frisian race." The invaders of Scotland in the fourth century were led most probably, as I shall show presently, by Vecta, an ancestor of Hengist, while in the fifth century they are found there under the latter's nephew Octa, and it was thence that Aesc went to rule over Kent; so that according to the Saga, which is our only authority, there can be no doubt that the invaders of Kent and those of the eastern seaboard of the Scotch lowlands were the same people. It is therefore natural to find Nennius speaking of one of the inlets on the Scotch coast as the Mare Fresicum; while Josceline, in his life of Kentigern, as Mr. Skene has pointed out, calls the shores of Culross, Fresicum littus. That learned author argues forcibly that this name was derived from a large Teutonic colony which occupied the modern counties of Fife and Kinross and the maritime part of Forfar bounded on the land side by the second chain of the Ochils and Sidlaw hills, which separate, as he says, the low maritime tract from the great Straths of Stratherne and Strathmor. This district is marked by a peculiar Teutonic topographical nomenclature in that the hills within it are termed laws, the Sidlaw hills, its frontier, being a notable instance. Another large colony was apparently settled near Dumfries, which is identified by Mr. Skene as the Caer Pheris of Nennius, and explained by him as the Dun of the Frisians in contrast with Dunbreton or the Dun of the Britons, and he quotes a curious anecdote from Josceline's life of Saint Kentigern, where we read that on his way back from Wales to Glasgow, the Saint stopped at Holden or Hoddelene (compare the name Hadeln applied to a considerable district on the Frisic coast between the Elbe and Weser) in Dumfriesshire, where a mound artificially rose from the ground as a platform for him, and we are told he thence addressed the people and demonstrated to them that Woden, whom they and especially the Angli believed to be their principal god, from whom they deduced their origin, and to whom they dedicated the fourth day of the week, was a mortal and a king of the Saxons.

In the midst of the Friescum mare was the island fortress of Guidi, identified by Mr. Skene with Fedra island near the Bass rock, but as I think more probably by the late Sir James Simpson with Inch Keith, which seems to me to preserve the alternative name of Jute. The same fortress is mentioned in the additions to Nennius and is there called Judea (M.H.B., 76). The name perhaps also remains in Jedburgh. Whether this be so or not there can be small doubt that the Jutes and Frisians were the same people, a conclusion supported by the occurrence of the names Hengist and Horsa among the modern Frisians by the Middle Age legends connecting Hengist with Holland, but above all by

the close affinity of the Northumbrian dialect of Anglo-Saxon with that of Friesland. How then came the change of name to Angle, on which name we shall have much to say in explanation of this very fact, when in a future paper we treat of the Angles? Precisely, I believe, as the Angles were sometimes called Saxons. Neither Saxons nor Jutes were old names because the people who were rigidly entitled to use them were new comers. The names were not those of the mass of the people but only of the ethelings or princely caste; that section of them to which the kings belonged, the sacred race of the north which supplied its upper stratum to the Norsefolk, to the Goths and Vandals and Franks, one branch of which was known as Geatas or Aescings, another as Scioldings, a third as Inglings, a fourth as Merwings, another as Saxons, etc., etc.; but all claiming close kinship and tracing descent from Odin and the Asirs. The invaders in the north of England were in fact Frisians led by a caste of this royal stock, a caste or sept known as Geatas. Thus it comes about that the latter name appears so late. Its first undoubted occurrence known to me is in a letter of the Frank King Theodebert to the Emperor Justinian, when he writes of their submission to himself in these words "subactis cum Saxonibus Euciis, qui se nobis voluntate propria tradiderunt . . . usque in Oceani litoribus dominatis nostra porrigitur" (Zeuss, 501). A little later we find them mentioned by Venantius Fortunatus, who flourished about the year 580, in a passage where the name "Dane" apparently occurs for the first time. He names them among the foes of the Franks in the time of Chilperic, thus—

> "Quem Geta, Wasco tremunt, Danus, *Euthio*, Saxo, Britannus,
> Cum patri quos acie te domitasse patet." (*Id.*)

These northern invaders were called Saxons by Claudian, they were known as Saxons to the Gaelic people of Scotland, who still call the English race by the name.

They were known as Saxons to the Cymraeg people of Wales and Strathclyde, for Saxon is still the indigenous generic name for the whole English race.

Adamnan speaks of King Aldfrid as visiting a friend in Saxonia, meaning the country of the Angles, and Nennius brings the people of Hengist from the island of Ongghul, *i.e.* from Anglen.

Bede, in his account of Yarrow, describes himself as an ecclesiastical office-bearer in Saxonia, although he was an Angle. Ambrones, as I mentioned in a former paper, is used by Bede as a synonym for the Old Saxons. It is curious to find the author of the additions to Nennius applying it to the Angles of Northumbria, who were baptized by Paulinus ("Mon. Hist. Britt., 76)," showing that the names Jute, Angle, and Saxon were used

indifferently. Bede, in fact, uses the phrase, "Tunc Anglorum sive Saxonum gens" of the actual followers of Hengist, whom he afterwards calls Saxons; while in the "Historia Britonum" we never meet with the name Jute, the invaders being invariably called Saxons by its author. Let us now on with our story. After the planting of the garrisons along the southern and eastern shores of Britain on the Saxon shore the southern parts of the island were for a long time unmolested, and the strong hands of the emperors who reigned in the first half of the fourth century were quite competent to restrain marauders. When we next read of the Saxons as invaders they are found in North Britain. They have nothing to do with the previous wave who were already settled in the south, and had then become Roman citizens, and this invasion forms an entirely new departure in Saxon history.

In the year 360 Ammianus Marcellinus mentions how the Picts and Scots having broken the peace to which they had agreed, were plundering the districts on their borders and keeping in constant alarm the provinces exhausted by former disasters, whereupon Lupicinus was sent with two extra legions and an auxiliary force of light armed Heruli and Batavi against them. We are not told that he did anything against them, and are led to infer, from the contemptuous terms in which he is referred to, that he did not. Four years later, namely in 364, the same author tells us that the Picts, Scots, Saxons, and Atacotti harassed the Britons with incessant invasions. This is the first mention of the Saxons in this their second campaign against the British territory, and as will be seen from the tribes they are named with, they clearly came from the North and were in alliance with the tribes who lived beyond the wall. Four years later, namely in 368, we are told that news reached Valentinian that Britain was reduced by the ravages of the united barbarians to the lowest extremity of distress; that Nectaridus, the Count of the Sea Coast, had been slain in battle, and the Duke Fullofaudes had been taken prisoner by the enemy in an ambuscade. Valentinian, struck with consternation, sent Severus and then Jovinus; and lastly, on account of the formidable reports which reached him, Theodosius, who at the head of a large army went to restore matters. At this time Ammianus says the Picts, who were divided into two nations, the Dicaledones and the Vecturiones, and likewise the Attacotti, a very warlike people, and the Scots, were all roving over different parts of the country and committing great ravages (*id.*, 453 and 454). The Vecturiones of this passage, as I shall show presently, were most probably Saxons. Claudian in his panegyric on Theodosius puts the Saxons in the Orcades or Orkneys. Thus:—

"Quid rigor æternus coeli, quid sidera prosunt,
Ignotumque fretum? maduerunt Saxone fuso
Orcades: incaluit Pictorum sanguine Thule
Scotorum cumulos flevit glacialis Ierne."
(Claudian de quarto Consulatu Honorii Augusti Panegyris, 30-34.)

Again, when in 396 and 397 Stilicho came to Britain to repel another invasion, the same panegyrist writes:—

"Munivit Stilichon, totam cum Scotus Iernen
Movit, et infesto spumavit remige Tethys
Illius effectum curis, ne tela timerem
Scotica, ne Pictum tremerem, ne litore toto
Prospicerem dubiis venturum Saxona ventis."
(Id. in primum consulatum Stilichonis, lib. ii, 247.)

These passages show that Scotland was at this time inhabited by colonies of Saxons as well as Picts and Scots, and this is confirmed when we turn to those much-neglected but very valuable authorities, the Irish Annals and Sagas, to which, excepting always their chronology, I am disposed to attach considerable credit. Now in one of the most famous of the battles mentioned in the early annals—that of Magh Mucreimhe near the present Athenry in the county of Galway, which is dated by the annalists about 195 A.D., and was fought between Mac Con and Art, son of Conn of the Hundred Battles—we are told the former was assisted by the Franks, *Saxons*, Britons and Albanians (O'Curry's Lectures, vol. i, xxi.).

Niall of the Nine Hostages is said in the Irish legends to have been killed in Britain on the Iccian Sea, *i.e.*, the Straits of Dover, in 405. He may have led one of the confederate armies which then so terribly molested the English shores.

In the story of Brudin Daderga we find mention made of many foreigners, among others of Saxons, at the Court of Conain Mor, King of Ireland.

In the Ulster Annals we find under the year 434, the date ought to be remarked, "Prima prœda Saxonum in Britannia." In 471, the second plundering of the Saxons in Ireland is mentioned.

The common object of attack, Roman-Britain, says Mr. O'Sullivan, brought the Irish and Saxons in contact at an early period; and that this intercourse was on the whole of a friendly character is shown by the frequent intermarriages between them and their presence at the Courts of Irish princes, but, above all, by the number of early Irish missionaries who devoted themselves not only to the establishment of churches and monasteries in the north-east of England, but curiously enough followed the stream of population from the Straits of Dover through Belgium to the Rhine, that is from the Iccian Sea, of which

there is so frequent mention in Irish MSS. relating to very early times, and to which one Irish prince at least led an expedition. We have another proof of this alliance against the Romanized Britons in the way in which Saxons were received at the schools of Ireland. The hostility of the two peoples appears to have first arisen in consequence of the quarrels between the Irish and Saxon Churches. Political causes helped to develop this hostility as soon as the Saxon dominion extended to the north of England, and the Saxon Kings of Northumbria came into direct contact with the Scotic Kingdom established in Scotland. The wars carried on by the Saxon Kings against the Scots and Picts involved the Irish in the quarrels of their brethren in Scotland, and led to the ravaging of the coasts of Ireland by the Saxons; and Bede in describing an expedition of Egfrid, King of the Northumbrians, against Ireland, under a commander named Beort in 684, adds that it miserably wasted that harmless nation, which had always been most friendly to the English, insomuch that in their hostile rage they spared not even the churches and monasteries. Alcuin similarly describes the same event.

"Præfuit Egfridus regno feliciter annis
Ter quinis faciens victriciabella, quousque
Agminibus missis animo trans æquora sævo
Præcipiens gentes Scotorum cœde cruenta
Vastare innocuas, Anglis et semper amicas," etc.

(*See* O'Sullivan on O'Curry's "Manners and Customs of the Irish," etc., 1, xxiv. and xxivi. Bede iv, c. xxvi, Alcuin Poema de Pont. et Sanc. eccl. Ebor, 835.)

The evidence, therefore, that the Saxons did not spare the Irish coasts when they attacked those of Great Britain is very conclusive. As they do not appear in the old Irish stories under the name of Saxons, however, it is interesting to find out whether they may not be mentioned under some other name. Mr. Skene, who has done so much for early history, pointed out that the people whom the Irish called Fomorians were doubtless the same folk as the Frisians. Fomorians or Pomorians is word for word the same name in form as Pomeranians, as has been pointed out by the learned Bishop of Limerick, Dr. Graves, and it means merely those living in the flatlands by the sea, and is therefore especially applicable to the Frisians. Several of the old Irish writers, as may be seen in O'Flaherty's "Ogygia," etc., call them Africans, and as Mr. Skene says, it is a remarkable fact that Procopius similarly calls the Frisians Africans.

The various notices of them in the Irish legends show they came from the neighbourhood of Scandinavia and were of Teutonic origin. In confirmation of this view, I may quote from Professor O'Curry, who says of them: "The Fomorians appear to have been rovers, tribes from Norway, Sweden, and

Finland, who crept down the Baltic and the coast of Norway and swarmed over the Orkneys, Shetland, and the Hebrides. They are said in our old histories and genealogies to have been of the race of Cam, son of Noah, and to have fled hither from Africa. They appear to have been the forerunners of the Vikings of later times; if indeed the race and propensities of those adventurers did not come down unbroken from the remotest times to the battle of Clontarf."

Mac Firbis classes the Fomorians with the Lochlanns or Scandinavians and the Saxon Galls in one of his works on old Irish genealogies. In another he devotes a chapter to them in company with the Lochlanns and Normans. I quite agree with the views here urged by Skene and O'Curry, and as these are by no means familiar facts, I have collected together such references as I could meet with about the Fomorians, culled from the old Irish heroic tales, etc.

Keating says of them:—"Those African pirates called Formhorauc were the descendants of Shem. They fitted out a fleet and set sail from Africa, and steering towards the Western Isles of Europe, they landed on the Irish coast. Some time after they arrived, the Nemedians engaged them in three bloody battles and defeated them. The first of these battles was fought at Sliabh Blaidhmia, the second at Ross Fraochain in Connaught, where Gan and Geanan were slain, the two principal commanders of the Africans. The third battle at Murbuilg in Dailreadah, where Starn, the son of Nemedius, was killed by Conaing, the son of Farbhar. In a fourth battle, the bloodiest and most desperate of all, fought at Cuambrius in Leinster, Nemedius and his forces, which were most of the men he had in his kingdom, were cut to pieces. Among the slain was Arthur, the son of Nemedius, born in Ireland, and Jobhchon, the son of his brother Starn. This broke the heart of Nemedius, who died shortly after, with 2,000 of his people, at a place called Oilean arda Nemhid, now Barrymon in the county of Cork.

"On his death the Africans pursued their victory and completed their conquest of the country and made the people tributary. They fixed their chief settlement at Torinis, also called Tor Conaing, where Morc, the son of Dela, and Conaing, the son of Faobhar, who gave its name to the island, ruled. The tribute of the Nemedians was annually collected at a place called Magh Goceidue, between Drobhais and Eirne, on the 1st of November. They took two parts of their children, their milk, butter, and wheat, which was collected thus: They employed a woman as tax collector, who compelled each family to pay three measures of wheaten meal, three measures of cream and three of butter every year. Magh Goceidue means the plain of compulsion."

The Nemedians, unable to bear the oppression any longer, rose in revolt and slew Conaing with all his children (Keating, 31–34).

Professor O'Curry describes in greater detail the struggle with Conaing. He says:—"During the revolt of the Nemedians, Morc, the son of Dela, was absent in Africa, but he returned soon after with 60 sail and fought a desperate battle with the Nemedians. The battle was fought on the strand, and was so hotly contested that neither side observed how the tide was flowing in until both were surrounded, so that many of those who escaped the sword were drowned."

Morc and what remained of his men managed to get on their ships, and they afterwards succeeded in conquering the island. A large number of the Nemedians then withdrew from the island under three chiefs, while the wretched remnant of the people lived in servitude to the Fomorians till the arrival of the Firbolgs. (*Id.*, 34 and 35.)

The Fomorians came under a valiant leader, named Conaing (? Kunung), son of Faebhar (? corruption of ap Ivar), and took possession of Tory Island, on the north-west coast of Donegal. This they fortified and converted into a kind of citadel or depôt, whence they plundered the Nemedians on the mainland. Driven to despair, the latter at length assembled all their people, men and women, on the mainland, opposite Tory Island, whereupon we are told the Fomorians sent their Druids and Druidesses to confound them. Under an arch-Druidess, named Reilbeo, the wife of Nemid, a fierce contest of blows and spells ensued, in which the Fomorians were defeated, and in a general fight which followed their fortress on Tory Island was destroyed and their chief, King Conaing, and his sons were killed (O'Curry, ii, 184 and 185). Presently, however, Morc, son of Dela, another Fomorian chieftain, returned with sixty ships and re-occupied Tory Island, and renewed the oppression of the Nemedians. Another battle followed, in which there was a great mutual slaughter. Morc and a few of his followers alone escaped to the island, and but one ship of the Nemedians, with only thirty warriors and three leaders, escaped to the mainland (*id.* 185). Tory is merely Tor ey, *i.e.*, Tor inis, or Tor Island, the island of the tower or fortress; and this use of the Teutonic "ey" for an island shows again that the invaders were Teutons.

Keating tells us that the palace of King Nemedius was built by four famous Fomorian builders, named Bog, Robhog, Rodan, and Ruibhne. They were called Fomorians, he says, because they were a sort of pirates or sea robbers that came originally from Africa. The next morning, after their work was done, Nemedius ordered them to be killed, lest they should build other buildings

exceeding his in beauty. They were killed at Doire Lighe and there burned. (*Id.* 31.)

One of the most famous of the heroic tales of the ancient Irish is that known as the Fate of the Children of Tuireann, translated by Professor O'Curry, in the Atlantis. This contains some very interesting notices of the Fomorians. In it we read that at the time the Tuatha de Danans were tributaries of the Fomorians, they laid a tax on the kneading trough, the quern, and the baking flags, and a poll tax of an ounce of gold upon every nose of the Tuatha de Danan, and this was extorted annually; anyone who refused to pay had his nose cut off.

Presently a deliverer came in the presence of Lugh of the Long Arms, who had been a great traveller, and returned home with a number of companions, opportunely, as eighty-one of the Fomorian tax collectors were about to proceed to their work. We are told four of them were called Eine (*i.e.*, Ina), Eathfaid (Eadfred), Coron, and Compar. Lugh fell on these publicans and killed seventy-two of them. The remaining nine he spared and allowed to return home. They set out, we are told, for the country of Lochlain (*i.e.*, Scandinavia), where the Fomorians were, and they related to them what had happened, and Balar asked if they knew who Lugh was; Ceithliome, Balar's wife,* said she knew: "He is a daughter's son of yours and mine, and it is presaged and prophesied that when he shall go to him the Fomorians' power there should come to an end." Then the chief men of the Fomorians went into a Council.

Eab Seanchab, the grandson of Neid and Sotal Salmhor; and Luaith-Leabharchaim, and Tume Mor of Triscadal, and Loisgum Lomghimeach; and Luaith Luaimneach, and Lobais the Druid; and Liathlabhar, the son of Lobais; and the nine deeply learned poets and prophetic philosophers of the Fomorians, and Balar of the Stout Blows himself, and the twelve white-mouthed sons of Balar and Ceithleann the Crooked Toothed, Balar's Queen.

And it was then Breas, the son of Balar, said "I will go with seven valiant and great battalions of the horsemen of the Fomorians into Erin, and I will give battle to the Joldhanach" (a term by which Lugh was designated. He was a kind of Admirable Crichton, and was thence called Joldhanach, *i.e.*, master of all arts), "and I will cut off his head and I will bring it to you upon the green of the Lochlainn Berbhe."† "It would well become

* She was present in the second famous battle of Magh Tuiredh, to be mentioned presently, and so injured Daghda that he died. Mr. O'Curry suggests that the name Inis Ceithleann, now Inniskillen, in the county of Fermanagh, is derived from her.

† Dr. O'Curry says, this was the name of the chief city of Lochlainn, mentioned in several of the Irish romantic tales, but whose position he could not fix. It is elsewhere called Berge. Can the name be connected with Bergen in South Norway?

you to do so" they said, and then Breas added, "Let my ships and my swift barks be made ready for me, and let food and stones be put into them." This was done, and Luaithhueach (*i.e.*, the Swift Storyteller) and Luaithleatharcham (*i.e.*, the Swift-bodied) were sent to assemble the army, and when they had come together, and were duly equipped, they set out for Erinn.

"And Balar followed them to the port and said 'Give battle to the Joldhanach and cut off his head, and tie that island which is called Eire (*i.e.*, Ireland) at the sterns of your ships and let the dense verging water take its place, and plant it upon the north side of Lochlainn, and not one of the Tuatha Dé Danann will ever follow it there.'

"Then they pushed out their ships and swift barks from the port, and they filled them with pitch, and with frankincense and myrrh; and they hoisted their sliding variegated sailing cloths, and they made a sudden start from the harbour and the shore-port, along the land that is not cultivated, and out upon the wide lying sea, and upon the wonderful abyss, and upon the ridge backs of the deluge, and upon the wet high cold-venomed mountains of the truly deep ocean, and they never slackened from that sailing course until they reached harbour and shore port at Eas Dara (now the village of Ballisadare on the river Uinshin, in the barony of Leney and the county of Sligo), and the King of Connacht at this time was Bodhbh Dearg, the son of Daghdha."

The strangers now proceeded to devastate Connaught. Meanwhile Lugh went to have an interview with them at Magh Mor an Aonaigh (*i.e.*, the great Plain of the Fair, its site is not known), where they were camped with their plunder.

Then arose Breas and said, "It is a wonder the sun should rise in the west to-day and not in the east as on other days." "It had been better had it been so," said the Druids. "What then is it?" said he. "The radiance of the face of Lugh of the Long Arms" was their reply.

When Lugh saluted them he told them he was but half a Tuath de Danann, being a Fomorian by his mother's side, and he then, we are told, cast a druidical spell over the cattle they had harried, and sent its own milch cows to every house in Erin and left them the dry bones, and having waited for his forces and put on his armour, Lugh and his people attacked Magh Mor an Asnaigh, and the foreigners joined battle with them and they cast the spears at one another, and when these were shivered they drew their broad-edged gold crossed swords from their blue bordered scabbards, and Lugh, seeing Breas, the son of Balar, surrounded with his warriors, rushed at him, and two of these body-guards were killed. Breas then demanded

quarter and promised to bring the Fomorians over to the battle of Magh Tuireadh; quarter was granted to him accordingly, and he was allowed to go with his Druids. The battle to which he promised to come is known as the second battle of Magh Tuireadh.

The second or northern battle of Magh Tuireadh, more commonly called the battle of Magh Tuireadh na b'Fomhor (*i.e.*, the Plain of the Towers or Pillars of the Fomorians), is very famous from the heroic narrative which has reached our day in regard to it, and which is quoted by Cormac in his Glossary as early as the ninth century. It was fought between the Fomorians and the people called Tuatha Dé Danann. The latter were governed by Breas, who was a Fomorian by his father's side, but a Tuatha Dé Danann on his mother's. He encouraged the invasions of the sea rovers, we are told, so that they succeeded in laying heavy tribute on the Tuath Dé Dananns. The latter, after conspiring secretly for three years, rose in revolt and drove away their King Breas, replacing him by his predecessor, Miadha, who, having lost his arm, had been disqualified from ruling, but had now recovered from his wound and even, according to the legend, had a silver arm made for him by the silversmiths and surgeons of his people. The Tuatha Dé Dananns also prepared a great store of spears and swords for the coming fray. Breas, when he was constrained to resign the throne, went with his mother to the court of his father, Elatha (? Ella), who, we are told, was at this time the great chief of the Fomorian pirates, who swarmed all over the German Ocean and ruled over the Shetland Isles and the Hebrides. Though he received his son coldly, Elatha nevertheless furnished him with a fleet and army to enable him to reconquer his position in Ireland, and was recommended by him further to the great Fomorian chiefs, Balor of the Evil Eye, King of the Islands, and Indech, son of De Dannand, and they collected all their armaments so that they are said to have formed an unbroken bridge of ships and boats from the Hebrides to the north-west coast of Ireland. Having landed there they marched to the northern Tuireadh, situated in the parish of Cell Nitrie Trena, and the barony of Tirerrill, in the county of Sligo (O'Curry's Lectures, 249; "Manners and Customs," iii, 213), a place surrounded with hills and rocks and narrow defiles. "Besides Meada of the Silver Hand, the chief men of the Tuatha De Dananns at this time were the great Daghda, Lug, son of Cian, son of Deancecht, their great Æsculapius; Ogina Grean Ameach (of the Sun-like Face), and others, but the great Daghda and Lug were the prime counsellors and arrangers of the battle." The account goes on to state how these two summoned their smiths, their cerds, or silver and

brass workers, their carpenters, their surgeons, their sorcerers, their cupbearers; their druids, their poets, their witches, and their chief leaders; and there is not, perhaps, in the whole range of our ancient literature, a more curious chapter than that which describes the questions put by Lug to these several classes as to the nature of the service which each was prepared to render in the battle, and the characteristic professional answer which he received from each of them (Lectures 249). The same accomplished author has abstracted the answers given by the smiths, the silversmiths, and the carpenter. The first of these replied: "Though the men of Erin should continue the battle for seven years, for every spear that falls off its handle and for every sword that breaks, I will give a new weapon in place of it, and no erring or missing cast shall be thrown with any spear that is made by my hands, and no flesh into which it will enter shall ever taste the sweets of life after; and this," said he "is more than Dubh, the Fomorian smith, can do." "And what will *you* give in the battle, Creiduc?" said Lug to the gold and silversmith. "This," said Creiduc, "rivets for spears and hilts for swords, and bosses and rims for shields shall be supplied by me to all our men."

"And you, Luchtine," said Lug to the carpenter. "This," said Luchtine, "a full sufficiency of shields and of spear handles shall be supplied by me to them." ("Manners and Customs," etc., ii, 249.) Here we gather that the shields were then made of wood with metal bosses and rims, etc.

The Fomorians were astonished when they saw the arms of their enemies. "They saw their own arms," says the story, that is, their spears and swords, "injured and useless after the fight; but it was not so with the Tuatha de Danann, for if their arms were rendered useless to-day, they were in perfect order for battle the next day, because Goibun the smith was in the forge making swords and javelins and spears and he made these arms by three turns, or spells, and they were perfectly finished by the third turn. And Luchtine made the spear handles by three chippings, and the third chipping was a finish.

"When the smith had finished a spear-head," says the tract, "he threw it from the tongs towards the door-post, in which it stuck by the point, and then Luchtine the carpenter had the handle ready and threw it so accurately that it entered the socket of the spear, and became so exactly fixed that it required no further setting"!!! Creidin the Cerd also made the rivets by three turns, and the third turn was a finish, and then he pitched them from his tongs into the holes in the socket of the spear, so as, without further boring, to pass through it, and the

handle fastening them so firmly as to require no further attention !!! etc.

The Fomorians sent out a man to spy out the enemy's camp; his name was Ruadan, and he was the son of Breas of the Fomorians, but his mother was Brigh, daughter of Daghda the great chief, and champion of the Tuatha de Danann, and on the strength of this relationship he gained free access to their camp. He reported the operations of the smith, the Cerd, and the carpenter, and was told to return and kill the smith. He returned therefore, and obtained a spear-head from the smith, rivets from the Cerd, and a handle from the carpenter. He then took it to a woman named Cron, the mother of Fianlugh, whose occupation it was to grind the arms on a whetstone. She ground the spear for Ruadan, who thereupon threw it at the smith and wounded him, but the smith withdrew it from his own body and threw it back at Ruadan, through whose body it passed, killing him on the spot. (*Op. cit.*, 249 and 250.)

In this battle the only weapons named were the Sligh, or long-pointed javelin for throwing the fogha or short spear, the Saighead bolgh or belly dart, the claidheamch or sword, and the Lic tachné or sling-stone (*id.*, ii, 295). The last of these is mentioned in an interesting passage of the tale. We are told that during the heat of the battle the Fomorian chief and warrior Balor was dealing fearful destruction among the Tuath de Danann, not more by his sword and spear than by his "Evil Eye," which he generally kept covered, but which he exposed during the fight. Among those who were struck down by this was Meada of the Silver Hand, the King of the Tuath de Danann, and the Lady Macha, daughter of Erumas, after whose deaths Balor again closed his eye. Thereupon the champion Lugh went up to him, and denouncing his cruelty, threatened him with instant death. Thereupon Balor opened the lid of his Evil Eye. When Lugh saw it move, he darted a sling stone at it and drove it through his skull, whereupon Balor fell dead among his people (*id.*, 251). We are told that among the Fomorians there was not a man who was not supplied with a "*lorica*" on his body, a helmet on his head, a manais or broad spear in his right hand, a heavy sharp sword at his girdle, and a firm shield at his shoulder. The swords are spoken of as tooth-hilted swords, *i.e.*, hilted with the tusk of the sea-horse. They are also described as charmed. Thus we are told that in the fight Ogma the champion obtained Ornai the sword of Tethra, King of the Fomorians; Ogma unsheathed the sword and cleaned it. "Then it related all the deeds that it had performed, and it is therefore," says the old tract, "that swords are entitled to the tribute of cleaning them whenever they are opened. It is

on this account, too, that charms are preserved in swords, from that time down. Now the reason why demons were accustomed to speak from weapons at that time, was because arms were worshipped by the people in those times, and arms were among the tutelary protectors of those times." (*Id.*, 254.)

As a pendent to the above description of the armature of the soldiers on either side, may be added the following description of Eladha, King of the Fomorians, who after the battle appeared suddenly before a Tuatha de Danann maiden in Connaught, dressed as follows: He had golden hair down to his two shoulders; he wore a cloak braided with golden thread, a shirt interwoven with threads of gold, and a brooch of gold at his breast emblazoned with precious stones. He carried two bright silver spears with fine bronze handles in his hand, a shield of gold over his shoulders, and a gold-hilted sword, with reins of silver and paps of gold. And we are told that on parting he left the maiden his ring of gold, which he took off his middle finger. (*Op. cit.*, iii, 155 and 156.)

The battle ended in the complete defeat of the Fomorians, who retired from the field under their surviving leader Breas, who had been captured, but obtained his liberty by a stratagem. (*Id.*, 213.)

We have other notices of the Fomorians. Thus we are told in the book of Invasions that Rath-Ciun-Eich (*i.e.*, the Horse-head Fort), was built in one day by four Fomorian brothers, who were condemned by Nemhedh as prisoners or slaves to do the work, but who were put to death again the next day, lest they should demolish the work again. (*Id.*, iii, 3.)

One of the famous legendary Kings of Ireland was Siorna, who for a while dispossessed Lugair, the son of Lugaidh, of the throne of Munster. The latter appealed to the Fomorians to go to his assistance. They came in great force, we are told, headed by their King Ceadarn (or Ceasarn), and having been joined by Lugair and his Munster men, fought the battle of Moin Trogaidhe, in which the leaders on either side were killed. On this battle an old poem survives:—

> "The battle of Moin Trogaidhe in the East,
> In which the Fomorians were cut down,
> He who fought it at the swelling hill,
> Was Lugair, the son of Lugaidh Lamh-fhind,
> He from whom Moin Trogaidhe is named,
> Was Trogaidhé, the tutor of the young warriors of Erin,
> And even of the Fomorians too
> Before the fight of this great battle."
>
> (*Id.*, ii, 356.)

In another story about the Fomorians, we read how when the famous hero Cuchullain was on a journey to Ireland, he landed

at Rechrainn (now Rathlin) Island, "where he found a beautiful girl sitting alone on the beach. On asking her why she thus sat there, she replied she was the daughter of the King of Rechrainn, that her father was annually compelled to pay a large and rich tribute to the Fomorians or pirates, who infested the Scottish Islands; that failing this year to procure the stipulated amount, he was ordered to place her, his only daughter, in the position he now saw her, and that before the night she should be carried off by the Fomorians. While this conversation was actually going on, three fierce warriors of the Fomorians landed from their boat in the bay, and made straight for the spot in which they knew the maiden awaited them. Before they had time to lay rude hands on her, however, Cuchullain fell on them and killed them all, escaping himself with but a slight wound which the maiden bound up," etc., etc. (O'Curry, Lectures, etc., 280 and 281.)

The facts here collected are not, I am aware, arranged in complete order. The vein I have here followed is almost a virgin one in British ethnological reasoning, and I have little doubt that when more fully explored, a rich result will reward the inquirer.

These facts, however, make it certain that Scotland and the North of Ireland were overrun probably in the middle of the fourth century by a large number of invaders, whom we identify as Frisians or Jutes. These invaders have in our view left a memorial of singular interest and importance in Southern Scotland, namely the Catstane. This famous monument has been illustrated with singular learning and ingenuity by Sir James Simpson, by Mr. Skene, by Professor Daniel Wilson, and others, and all are agreed that it is a perfectly genuine monument. It is situated in the parish of Kirkliston, on the farm of Briggs, in a field on the north side of the roads to Linlithgow, and between the sixth and seventh milestones from Edinburgh. It is a massive unhewn block of greenstone trap, like similar boulders in the district. Its height above the ground is 4 feet 6 inches, it is about 4 feet 5 inches in width, and 3 feet 3 inches in thickness. Sir James Simpson had the ground about it excavated, and found that its total length was 7 feet 3 inches. It rests on a basis of stones, which apparently once formed a built-up grave, but which has long since been rifled. A century and a half ago it was surrounded by a circular range of large flat-laid stones. The stone is known as the Catstane or battle-stone. Upon the stone is an inscription, which all the most competent lapidary authorities known to me who have examined it pronounce to be perfectly genuine, and to be of that peculiar debased Roman style which prevailed in the fourth century. It was first published so long

ago as 1699–1700, in the "Mona Antiqua Restaurata," in a letter to Rowlands, the author of that work, from the well-known Welsh antiquary, Humphrey Llwyd, and has been since frequently copied. (An elaborate paper upon it, showing great learning and ingenuity, was published in the 4th volume of the "Proceedings of the Society of Antiquaries of Scotland," p. 119, by Sir James Simpson.) The inscription is as follows: "IN OC TUMOLO JACIT VETTA F VICTI." For a complete palæographical commentary on the inscription I must refer to Simpson's paper just cited, and will at once turn to the person commemorated. The two names are clearly not Roman, nor are they Celtic, and the question remains whether they are Teutonic, and about this there can be no doubt. Vetta or Witta occurs in the "Traveller's Tale," as the ruler of the Swafs or Suevi. The name Witta is still in use among the Frisians. The tenth Bishop of Lichfield in Florence of Worcester's list, is Huita, called Hweicca or Hweitta, by Simeon of Durham. His death is mentioned under the year 775, in Florence, and he is then called Witta. But we can go further. Vitta was the name of Hengist's grandfather. In the "Historia Britonum," which in my view contains the oldest recension of the Saga of Hengist, he and Horsa are made the sons of Guichtgils, the son of Guicta, the son of Guecta (Grime's ed., 18). These names occur here in their Welsh form. The Anglo-Saxon Chronicle gives them as Hengist, the son of Wihtgils, the son of Witta, the son of Wecta (Earles' "Parallel Chronicles," 13). Bede uses V instead of W in the corresponding passage. Here then we find not only that Vitta and Victa were good Teutonic names, occurring in a good Teutonic genealogy, but that Vitta occurs as the son of Vecta, just as he does on the stone. This most remarkable coincidence in such rarely-occurring names, has led such cautious antiquaries as Simpson, Skene, etc., to suggest that the Vitta, son of Vecta, of the inscription, is no other than the grandfather of Hengist, and I confess that I do not see how this conclusion is to be gainsayed, and I accept it as at least tentatively sound.

In the Irish Nennius, the name Vitta is variously written Guighte and Guite. This has led the same antiquarians to connect the name with the city of Guidi, mentioned by Bede, which was situated in the midst of the Friesicum sinus or Friesic gulf. His Urbs Guidi thus becomes the town of Vitta. Again, one of the divisions of the Picts, mentioned by Ammianus in the year 368, was the Vecturiones. It has been suggested that the Vecturiones were so named from Vecta, the father of Vitta, who was probably a famous chieftain and leader, and who gave the race its name, in the same way that the leaders of the Scotch and Irish clans and septs did, and as the Irish traditions declare the leaders of the Dalriadians and Cruithne or Picts did.

Lastly, it is not uninteresting to find that Vit is the name given to the Jutes by Bede, and it may be that Vit is derived from Vitta, as Vecturiones is from Vecta.

I have therefore come to the opinion that in the fourth century, and before Hengist and his people had settled in Kent, Jutes, under the leadership of Hengist's ancestor, were already planted in the South of Scotland and the North of Ireland. If the arguments here used about the Catstane be deemed conclusive, and if we assign the year 368 for the approximate date of Vecta's presence in Scotland, we may with more confidence perhaps accept the position of the "Historia Britonum," and of Geoffrey, that the Saxons against whom St. Germanus fought were the Jutes of Hengist, and that the Hallelujah victory in 429 was in fact won against him and his people after the flight of Vortigern. Let us now examine the Saga about Hengist.

Gildas, Nennius, and Bede are agreed that the strangers came in three cyulis, *i.e.*, keels or long ships, and that they were commanded by the two brothers, Horsa and Hengist. Gildas says they were invited by Vortigern, in which he is followed by Bede. ("Mon. Hist. Britt.," 13 and 121). Nennius, who doubtless preserves the older as he does the completer version of the story, informs us that they had been exiled from their country (*op. cit.*, ed. Gunn, 18). While Geoffry of Monmouth adds that, like the later Norsemen, they went into exile in consequence of the national custom, by which, their country being overstocked with people, the youth were assembled together, and choice made by lot of such as were strongest, and they were thereupon constrained to emigrate, and chose Hengist and Horsa as their leaders. Geoffrey reports the conversation which took place between them and Vortigern, in which they said they worshipped Saturn and Jupiter and Mercury, whom they called Woden and Freya (*op. cit.*, ed. Giles, 116 and 117). All this seems probable enough. Nennius tells us the invaders landed in the Isle of Thanet, at the mouth of the Thames, a famous trysting-place of the later pirates. The later Anglo-Saxon Chronicle and Ethelwerd add that they landed at Hypwinesfleet, which is doubtless to be identified with Ebbsfleet, where was probably one of the two fords across the Wantsum (which separates Thanet from the mainland), mentioned by Bede, the other being doubtless at Wade (Guest, Arch. Inst. Sal., 53, note). Ebbsfleet is still the name of a farm-house on a strip of high ground, rising out of Minster marsh, in the Isle of Thanet. It is now some distance inland, but it was evidently at one time a promontory running out between the estuary of the Stour and Pegwell Bay. The tradition that "some landing" took place here, is still preserved at the farm, and the field of clover which

rises immediately on its north side, is still shown as the spot. (Stanley's "Memorials of Canterbury"; Murray's "Guide to Kent and Sussex," 210). St. Augustine is said to have landed at the same place, as is also St. Mildred, the great Saint of Thanet, showing that Ebbsfleet was the ordinary landing-place in the island, and so confirming the tradition contained in the Chronicle.

We are told the strangers were welcomed by Vortigern, who explained to them how he was harassed by the attacks of the Picts and Scots, and promised if they would assist him to make them a grant of land. To this they assented. At this time it would seem that the Picts were engaged in ravaging the northern parts of the island, and the allies marched against them. Geoffrey says they marched against them beyond the Humber. Henry of Huntingdon, who seems to preserve some other British traditions, tells us the Picts and Scots had advanced as far as Stamford in the south of Lincolnshire, where he places the site of the battle in which the Saxons were victorious. Geoffrey adds that in reward for their services they were granted large possessions of land in Lindsey (part of Linconshire) (*op. cit.*, 118). Mr. Haigh suggests that in this campaign the Saxons coasted round the island from Thanet to the Nen, and landed near Peterborough, and he suggests that Horsey Hill, about two miles from Peterborough, commemorates the success of Horsa on this occasion ("Conquest of Britain," 209). If we are to credit the statements of Hector Boece, the Saxons not only defeated the invaders in England, but pursued them into Scotland, and ravaged the Merse and Pentland, and defeated the Pictish army in a famous struggle. (*Id.*, 210 and 211).

To return to more sober chroniclers, we are told by Gildas, Nennius, and Bede, that after his victory, Hengist sent to Germany for reinforcements. Pleased with the fertility of the country, he had determined to remain here, and his people soon became exacting. Gildas says they complained that their monthly pay was not given them, and threatened to devastate the island if they were not more liberally treated. Nennius says that when their numbers were greatly increased, and the Britons could not feed them, as was their wont, they demanded food and clothing. To their request the latter answered, "Your number is increased, your assistance is now unnecessary, you may therefore return home, for we can no longer support you." This, of course, was no part of Hengist's policy, and we are told that shortly after a fresh fleet of 16 keels arrived, bearing, *inter alios*, Hengist's beautiful daughter (Nennius, 22). Her name is not given in the text of the oldest version of the "Historia Britonum," nor in fact in the text of any of the copies. It

occurs only in the capitula attached to the Cambridge MS, which, according to the late Sir Thomas Hardy, is a very inferior MS., and abounding in interpolations. It dates from the end of the twelfth century. In these capitula, which I take to be of no authority whatever, the daughter of Hengist is called Rourwen. It is probable that this name has been taken from Geoffrey of Monmouth.

It has been well said that the name is not Teutonic, and in fact it occurs in two old genealogies as the name of a Celtic ancestor of the kings of Scotland ("Chrons. of the Picts and Scots," 134 and 144). But it seems to me that the mistake can be traced. We are told that the British name of Thanet, which was granted to Hengist, was Roihin (Nennius), which is also given with various readings as Ruoihin, Ruoichim, Ruoichin ("Mon. Hist. Britt.," 63). The name survives, according to Dr. Guest, in Ramsgate. I believe the name Rowena, as applied to Hengist's daughter, has been created out of a misunderstood reference to this local name, a position which is strengthened when we find that a considerable district in Wales also bore the name *Rowenanc.* (*See* "Annales Cambriae," sub ann., 816, and Brut y Tywysogeon, sub ann., 817, "Mon. Hist. Britt.," 834 and 844). It will be noted that Geoffrey of Monmouth does not mention Thanet as granted to Hengist, which makes it very probable that he mistook its British name for a personal one.

On the arrival of this reinforcement, the Saxons invited Vortigern and his officers to a feast, which was also attended by his interpreter Ceretic. Some of the later copies of the "Historia Britonum" have Certecselmet, a mistake arising out of the confusion of Vortigern's interpreter with Ceretic, the petty regulus of Elmet or Leeds, who was, more than a century later, defeated by Edwin of Northumbria. The late copy unfortunately followed by Dr. Petrie in the "Mon. Hist. Britt.," also adds that Ceretic was the only Briton who understood the Saxon language, a phrase which does not occur in the early recension of the text published by Mr. Gunn, and which seems to be a marginal gloss that has crept into the text. Hengist ordered his daughter to ply his guests liberally with wine and mead, and we are told by Geoffrey that making a low curtsey she approached Vortigern, and said "Laverd king wacht heil" (*i.e.*, "Hlaford conung wacht heil"), ("Lord king, your health"). When Vortigern saw her he was much enamoured, and asked the meaning of the phrase from the interpreter, who explained it, and bade him reply "Drinc heil," upon which he took the cup from her hand, kissed her, and drank himself (*op. cit.*, ed. Giles, 120). This anecdote, preserved by a British tradition, and with the correct form of words, greatly strengthens, as Mr. Haigh says, the probable truthfulness of

the whole narrative. Having at length got drunk and being madly in love with the fair stranger, he asked her in marriage from her father, promising through the interpreter to give Hengist whatever he should ask. Hengist having consulted with his companions, demanded the province called Ceint by the Britons and Centland or Centwaraland by the English. Dr. Guest explains Caint or Cent as meaning the open country as distinguished from the downs farther west, which were known as Gwent ("Proc. Arch. Ass. Sal.," 32). To this Vortigern agreed, and the province was made over to the strangers without the consent of the regulus who reigned there. The term used here is "guoranogono," which has been read by Geoffrey and others as a personal name Guorangan, but as Camden long ago showed, Guorong means a viceroy, and Langhorn accepting this interpretation, treats the word as a generic one for deputy or petty regulus, a conclusion followed by Mr. Gunn (*op. cit.*, note 86). What strengthens this view is that Kent being the very nucleus of the Old Saxon shore, it is probable that the personal name of its chief at this time would be Teutonic. Vortigern now married the Saxon princess. After this, we are told, Hengist addressed Vortigern, and said "I will be to you both a father and an adviser; despise not my counsels and you shall have no reason to fear being conquered by any man or any nation whatever, for the people of my country are strong, warlike, and robust; if you approve, I will send for my son and his brother, who at my invitation will fight against the Scots, and the people who live in the north, near the wall called Guaul" (*op. cit.*, Gunn 23–24). Here Ochta and Ebessa are called brothers, so they are called in one place by Geoffrey of Monmouth (Giles ed., 122), but in another place where Ebessa is called Essa, he is spoken of as Ochta's kinsman (*id.*, 165). In other copies of the "Historia Britonum" he is spoken of as his "fratuelis" (*i.e.*, nephew), and not brother ("Mon. Hist. Britt.," 66). In the "Brut. Tyssilio," Ossa is called Ochta's uncle (Gunn, *op. cit.*, note 87). In the Capitula attached to the later copies of Nennius, he is called the son of Horsa, and therefore the cousin of Ochta ("Mon. Hist. Britt.," 50). In the Irish Nennius, Ebessa is called the son of Ochta's mother's sister (*op. cit.*, 89). The balance of evidence goes to show that he and Ochta were in fact cousins, as Mr. Haigh has concluded.

Vortigern assented to Hengist's proposal to send for his relatives, and we are told they accordingly were invited. The "Historia Britonum" tells us they came with forty ships. Geoffrey that they were accompanied by Cherdich (*i.e.*, no doubt by the Ceretic already named), whose knowledge of the Saxon language shows he was in some way connected with the invaders. He

says they came with 300 ships. We are told they sailed round the country of the Picts, laid waste the Orkneys, and occupied many regions to the confines of the Picts (*op. cit.*, Gunn's ed., 24). Later MSS. describe the regions so attacked as being beyond the Fresic sea (one copy says "trans Mare Frenessicum" "Mon. Hist. Britt.," 66). This phrase apparently formed no part of the original narrative, and was a later explanatory gloss. The statement that they sailed "*round* the country of the Picts," and the mention of the Orkneys, shows that the districts in the west of Great Britain on the Irish Sea were ravaged by them. The term "Mare Fresicum" may, however, merely mean the Irish Sea. The Irish Nennius explains it as the sea north of the Gaidheal (*i.e.*, of the Irish), and Ireland was probably the land of the Scots in the eyes of Nennius.

We are told they occupied many regions near the Guaul and as far as the Pictish confines, and it would seem that the land ceded to them was south of the Firths, and probably in the Lothians.

The island fortress of Guidi in the Firth of Forth, which is mentioned by Bede, and which, as we have seen, has probably some connection with the Jutes, was perhaps a relic of their occupancy. We shall revert to these northern invaders presently; meanwhile let us turn once more to Hengist. We are told he continually invited fresh bodies of his countrymen to come over and settle in Kent, so that the islands whence they came were left vacant. Geoffrey tells us the Britons now began to get alarmed, and "the number of those who had come was now so great that they were a terror to his subjects, and no one could now know who was a pagan, or who a Christian, since pagans married the daughters and kinswomen of Christians. They accordingly remonstrated with Vortigern, who was, however, infatuated with his new friends. The Britons thereupon deposed him and set up his son Vortimer in his place. We are told he fought fiercely against the Saxons, whom he drove out of their conquests. He fought several battles with them. The "Hist. Britt." says four, but it only describes three: the first at the River Derwent, which has been identified with every probability with the Darent in Kent (the Cray joins the Darenth in the marshes, just before it falls into the Thames). Thence Langhorn has argued with some probability that this battle is the same as the one mentioned in the Anglo-Saxon Chronicle in the year 457 as having been fought at Crecganford (*i.e.*, Crayford, near Dartford). The Anglo-Saxon Chronicle assigns the victory, however, to the Saxons, who are variously said to have slain four troops, or 4,000 men of the Britons. Thereupon the latter forsook Kent and retired to London. The leaders of the Saxons are called

Hengist and Aesc his son ("Mon. Hist. Britt.," 299; "Earle's Parallel Chronicles," 13). But this account, as I have said before, does not seem to me to be so trustworthy as those in the British writers. The second battle was fought, according to Geoffrey, at Epifford, which the "Historia Britonum" gives more correctly as Episford, the form the name has in the Anglo-Saxon Chronicle. Tysillio gives the name in a Welsh translation as "Rhyd y Pysgod" (*i.e.*, the ford of the fish, Gunn, *op. cit.*, note 102), while the "Historia Britonum," adds that the place was known as Sathenegabail or Rithergabail ("Mon. Hist. Britt.," 69). These forms are both doubtless corrupt. Dr. Guest explains the name as "Syddin y eenbail," (the house of the ford). This place was called by the Britons "Saisenaeg babail," because the Saxons were slaughtered there (Gunn, *loc. cit.*). In this battle we are told in the "Historia Britonum," and by Geoffrey, that Horsa, the brother of Hengist, and Katigern, the brother of Vortimer, were killed. The latter implies they killed each other in single combat. In the Anglo-Saxon Chronicle the battle where Horsa was killed is dated in 455, before the battle of Crayford. The site of it is called Aeglesthrep in the Chronicle and by Ethelwerd, and Ælestren by Henry of Huntingdon, which is identified tentatively by the editor of the "Mon. Hist. Britt." with Aylesford. The latter place, which is named in later Saxon days as Ægelesford, probably derived its name from the Latin-Welsh Eglwys, a church, and meant the church ford. Dr. Guest says Aylesford church probably occupies the same site as the Welsh Eglwys, and is situated on the top of the bank overhanging the village, and its remarkable position explains the propriety of the names Aegelesford, Aegelesthrip or Aehlestren, the church ford, village, or cross (*op. cit.*, 47). Kemble explains it as compounded with the name Eigil or Egil, the mighty archer of the Northern Sagas. Bede tells us that the site of the battle was in the east of Kent, and was marked by a monument bearing the name of Horsa. At Horsted, two miles north of Aylesford, a heap of flint stones is still pointed out as his grave (Murray's "Kent," 181). Horsted in Sussex and Horsham in Kent possibly also retain traces of his name.

Horsted is not the only reputed relic of the fight near Aylesford. Near that town is the famous cromlech known as Kits Coity house, which has been pointed out as the burial place of the British chieftain Catigern, who fell in the same battle. Kitts hill and Kite's house on Dartmoor are similar names given to ancient tombs, which disturb the value of the plausible etymology, and Kits Coity has been otherwise explained as derived from Ked Coity, the "hollow in the wood." A wood once overspread the hill-side and of it some venerable yews remain. The cromlech, we are

further told, is the centre of a group of monuments which it is supposed were once connected with a similar group in the parish of Addington. Near the cromlech is a large chambered tomb, in the hollow below which is a slab called the "coffin stone," while the hill above is strewn with small cromlechs surrounded by stone walls; while many circular pits with chambers at the bottom, like those at Cisbury and some filled up with flints, occur along the brow of the chalk hills on either side of the river. Many British coins have been found there, while we are told a boulder on the top of the hill (now destroyed) was formerly known as the white horse stone "and pointed out as the place on which Hengist after the death of Horsa at Aylesford was installed as first King of Kent" (Murray's "Kent," 183).

This shows how legends grow and get distorted. Whether the cromlech and the heap of flints mark the respective graves of the British and Saxon chiefs or no, there can be no hesitation in accepting Aylesford as the site of the battle, and these numerous remains, as well as those of a Roman cemetery and a villa which was destroyed by fire, existing close by the town, prove that the site was a famous one, a position which is at once appreciated when we find it was situated at the lowest ford on the Medway.

The third struggle, we are told, was fought near the stone on the shore of the Gallic Sea, where the Saxons being defeated fled to their ships (Gunn, *loc. cit.*). Other MSS. of the "Hist. Britonum" give the name of the place as "Lapis Tituli." This has been identified with some probability with Stonar; Stánáre, "the stone of honour," being the equivalent of Lapis Tituli (Haigh, *op. cit.*, 241). Stonar was once the commercial rival of Sandwich, and is situated about a mile below that town. It was totally destroyed by the French in 1385. The name still survives in a farm-house, while the foundations of the church and adjoining buildings may be traced amidst a clump of trees (Murray's "Kent," 156). It is now included in the Isle of Thanet, but was formerly apparently separated by a wide channel from the island. It is close to Ebb's fleet, and the fight there is clearly the same as the one mentioned in the Anglo-Saxon Chronicle as having been fought at Wipped's fleet in 465, where we are told 12 British ealdormen were slain, while one of the Saxon thanes named Wipped (the eponymos of Wipped's fleet) also fell. After this defeat the Saxons took to their ships, and according to Geoffrey, retired to the Isle of Thanet, where Vortimer pressed them hard. It must be remembered that the Wantsum was passable for ships of burden sometimes, so that it is probable the ford could only be crossed *on foot* at ebb tide. This explains their taking to their ships (Guest, *op. cit.*, 53, note). Vortigern, it would seem, was all this while living with the invaders, and we are told he was

now sent by them to Vortimer to request permission for them to embark quietly homewards. While a conference was being held on the subject they went on board their long galleys, and leaving their wives and children behind them returned to Germany (*op. cit.*, Giles, 123). Thus concluded, according to the British authorities, the first campaign of Hengist in Britain, and the account seems in every way probable and much more credible than the disjointed Anglo-Saxon notices. The latter claim victory after victory for their people, and yet 18 years after the landing of Hengist (*i.e.*, in 465), and after the Britons, as we are told, had retired from Kent and taken refuge in London, we find them actually fighting the Saxons at Wipped's fleet, the very place where they landed originally; but all becomes quite clear if we follow the British accounts. They acknowledge that Kent or a large portion of it had been made over to the invaders by Vortigern, and then go on to tell us how in one battle after another they were driven back until they were finally ejected from the island. In this campaign Vortimer was probably greatly aided by the Old Saxon colonists of the Littus Saxonicum, who having shared in some of the culture of the Roman world and settled upon its soil were doubtless also little inclined to tolerate the strangers. The campaign was also in all probability a sharp one and not distributed, as the Chronicle would make out, over 18 or 20 years—a statement in unison with the artificial chronology which it follows.

The "Historia Britonum" tells us that shortly after these events Vortimer died. Tyssilio and Geoffrey accuses his stepmother Rowena of having hired a man to poison him. Boece makes out that the British nobles were accessory to her crime (Gunn, note 104; Geoffrey, *loc. cit.*). We are told that before his death he ordered his friends to bury his body at the entrance of the Saxon port, and at the rock where the Saxons first landed, for though he said they may inhabit other parts of Britain yet if the Britons followed his commands they would never remain in this island (Gunn, 30). Geoffrey, who has apparently somewhat misunderstood the notice he translated, says Vortimer ordered a brazen tomb to be built, and makes it appear it was the tomb which was to frighten the enemy (*id.*, 124). We are told the Britons imprudently disobeyed Vortimer's commands and neglected to bury him where he had commanded (Gunn, 30); a late copy of the "Hist. Britt." says they buried him at Lincoln ("Mon. "Hist. Britt.," 69). Tyssilio and Geoffrey both say at London.

On the death of Vortimer we are told that Hengist once more returned. Geoffrey says that Vortigern having recovered the throne, sent him an invitation on the advice of his wife and bade him come with only a small retinue so as not to arouse

suspicion; but he set out with an army of 300,000 (!!!) men and a vast fleet, and calling his leaders together he consulted with them as to the stratagem they might employ against Vortigern and his army. They sent messengers to him with promises of friendship which were correspondingly met by Vortigern. On pretence of ratifying the treaty, the Saga tells us that Hengist invited the king, his nobles and military officers to the number of about 300, while he ordered 300 of his own people each to conceal a knife in his stocking. When the Britons were sufficiently drunk he told them he would cry out "Nemed eure seaxes" (*i.e.*, "Take your knives again")—a good Teutonic phrase, speaking well for the authenticity of the legend; when each man was to draw his weapon and kill his companion. The king was to be spared, inasmuch as he was his son-in-law and his ransom might be worth a good deal. The feast took place, and we are told Hengist's companions followed his commands, and 300 of the Britons were laid low. Geoffrey says 460 British chiefs, and that they were buried by St. Eldad near the Monastery of Ambresbury in the neighbourhood of Salisbury. Vortigern was made prisoner, and we are told purchased his redemption by surrendering the three provinces of East, South, and Middle Sexe, besides other districts at the option of the invaders ("Mon. Hist. Britt.," 70, note 14). The last sentence is singularly confirmatory of the arguments we have previously urged that Sussex, Middlesex, and Essex were not founded by independent bands of settlers, as the English Chronicle falsely avers, and shows that they were integral parts of the old kingdom of Kent from which Essex was only detached in the days of Ethelbert. Geoffrey says the invaders, after the massacre at the banquet, took London, York, Lincoln and Winchester, wasting the country through which they passed terribly. On the retirement of Vortigern the Sagas make him be succeeded by Aurelius Ambrosius, who came from Armorica with a large force to succour his countrymen. Geoffrey tells us he fought a battle against Hengist at Maesbeli. In this fight Eldol, who is called the Duke of Gloucester and who had escaped from the recent massacre fought with great bravery. Hengist and his people were defeated and retired towards "Kaerconan, now called Cumingeburgh," says Geoffrey. Near the town another battle was fought. In this fight Gorlois, Duke of Cornwall (?), distinguished himself and Eldol engaged Hengist in single combat. He seized Hengist, we are told, by the helmet and dragged him by main force among the Britons and then shouted out in great joy "God has fulfilled my desire, my brave soldiers. Down, down with your enemies the *Ambrons*, the victory is now in your hands! Hengist is defeated and the day is your

own." They accordingly pressed the invaders hard and the Saxons fled wheresoever they could find shelter, some to the cities, some to the woods on the hills and others to their ships; but Octa, the son of Hengist, made his retreat with a great body of men to York, and Eosa, his kinsman, to the city of Alclud, where he had a very large army for his guard ("Geoffrey of Monmouth," 150-153). Geoffrey says that Aurelius now captured the city of Conan and then called a council to deliberate as to what should be done with Hengist. At this council, we are told, Eldad, Bishop of Gloucester, brother of Eldol, insisted that he should be hewn in pieces like Agag, which Eldol accordingly carried out. "But Aurelius," says Geoffrey, "showed moderation in all his conduct, commanded him to be buried, and a heap of earth to be raised over his body, according to the custom of the pagans." Thence he went to York to besiege Octa's son there. Feeling that resistance was hopeless the latter went out with his principal chief, carrying a chain in his hand and sand on his head (!!!) and said, "My gods are vanquished, and I doubt not the sovereign power is in your god who has compelled so many noble persons to come before you in this suppliant manner." On the advice of Eldad mercy was shown them and they were allowed to settle in the country. After this Eossa and the rest who had fled, being encouraged by Octa's success, came also and were admitted to the same favour. The king therefore granted them the country bordering upon Scotland and made a firm covenant with them (*id.*, 154 and 155). Whatever the value of this legend, I am firmly convinced that it was no invention of Geoffrey's, but was the genuine Saga, of which a shorter recension is contained in the "Historia Britonum." The story of Hengist's final defeat and of the expulsion of the Jutes from Kent is confirmed by the remarkable fact that the Royal House of Kent was not named after him as its patronymic, but was styled that of the Aescings, after a prince who is made his son by Bede and the Chronicle, which makes it probable that there was a new departure with Aesc, while it can be shown from other evidence that Octa and Eosa or Ebessa had a settlement in Southern Scotland and there fought with Arthur, etc.

This is a good halting stage in our journey. We have by no means exhausted the interesting problem of the ethnology and early settlements of the Jutes and shall have more to say about them in another paper. But this one has already extended to an inordinate length, and we can only hope that the new facts brought forward and the interest of the question upon which modern historians are so divided may excuse us. Our next paper will deal with the Franks.

OBSERVATIONS *upon the* METHODS *and* PROCESSES *of* ANTHROPOMETRY. By Dr. PAUL TOPINARD.

FOR many years it has been my duty as Assistant Director of the Laboratory of Anthropology, of which my lamented master, Broca, was director, to show to the pupils and to travellers the method of taking measurements upon the living body, according to the instructions of the Anthropological Society of Paris. I entered into their troubles, they related to me the difficulties they have experienced, and often, I must say, I have had to which confess that the theory and the practice were not always in accord. Moreover, at the Society I have many times had to make reports upon the rough lists of measurements collected by travellers, and with these I have also had grievous deceptions.

As Professor at the School of Anthropology I have had to compare the proportions obtained by different methods in Europe and in America, and with the most varied reference points (*points de repère*), and here also I have met with many disappointments. Finally, I have measured for myself the skeleton, the living and the dead body; I have sought, and I still seek, how the system may be improved.

I have therefore thought that there might be some interest in submitting to the Anthropological Institute the results of my experience before the Anthropometric Committee appointed by the British Association shall have presented its report.

The greatest part of my course of lectures of 1879–80 has had reference to the canons studied in the arts and in anthropology. I have made a communication to the Society of Anthropology of Paris upon the instruments which I employ,* and I have just published a memoir upon anthropometry in general and upon the proportions of the trunk in particular.†

Anthropometry, since the time of Quételet, means the measurement of the entire human body (living or upon the dissecting-room table) with the view to determine the respective proportions of its parts: 1st, at different ages, in order to learn the law of relative growth of the parts; 2nd, in the races, so as to distinguish them and establish their relations to each other; 3rd, in all the conditions of surrounding circumstances, in order to find out their influence upon the ascertained variations. The systems of proportions imagined by artists from those of ancient India and Egypt down to the present time bear the name of

* Bull. Soc. Anthrop, 1880, p. 269.
† "Revue d'Anthropologie," 1880, p. 593.

canons; the types discovered by anthropometry ought to bear the same name. Anthropometry then consists of all those accurate processes which lead to the knowledge of the different canons, according to the ages, the sexes, the races, the surrounding conditions, etc.

Its horizon is therefore considerable, and the types to be established require large series of subjects, in which individual variations shall disappear, so as to leave apparent only the general mean. The small number of skeletons which our museums contain is absolutely insufficient, and living people alone can supply the number indispensable to arrive at any degree of certainty. All our efforts should therefore tend to perfect the methods of operating upon the living, and to simplify them, so as to render them accessible to all—to travellers, officers of the navy, recruiting agents, schoolmasters, etc.

It follows that the number of measurements demanded should be reduced to those strictly necessary, and only those insisted on which are really useful and lead to the knowledge of one of the natural morphological divisions of the body. The more one exacts from a traveller, the more unsatisfactory are his replies. To obtain good measures, one should ask for few. Measurements taken obliquely are wanting in accuracy, so are lengths taken with the tape; they ought then to be abandoned. Heights above the ground, breadths, some circumferences and perhaps the facial angle—to these we ought to limit our demands.

To determine the canon of the proportions of a body is to establish the relation of the dimensions, constant in the same type, of the natural divisions of the body. The intrinsic proportions of each of those divisions comes afterwards, and gives rise to particular branches of the science: cephalometry, pelvimetry, etc. The dimensions to be obtained directly, or by the method of subtraction (as, for example, the height of the middle finger above the ground taken from the height of the acromion equals the length of the upper limb), relate to—

1. The trunk.
2. The head and the neck taken separately.
3. The lower limb as a whole.
4. The upper limb as a whole.
5. Each of the segments of the limbs, the hand, the forearm and the arm in the one case; the foot, the leg and the thigh in the other.
6. The intrinsic proportions of the head (cranium and face with its further subdivisions); of the trunk (shoulders chest, pelvis, hips); of the foot (heel, metatarsus, toes); of the hand.

To find the reference points most exact and least subject to

error, which will best give these dimensions, is the first problem to be resolved.

Anthropometry having for its object (with some exceptions as the volume of the cranium, the height, etc.) not absolute dimensions, since that which is large in one may be small in another of a different stature, but relative dimensions, proceeds only by comparisons. Two methods in this respect claim our preference. In one, inaugurated by White in 1799, and adopted by Broca, the dimensions are compared directly with one another, one being reduced into centesimal fractions of the other; for example, the fore-arm compared with the arm or the maximum breadth of the shoulders with the maximum breadth of the hips. In the other method all the dimensions of the body are compared with one and the same module which in the canons of artists may be the nose, the hand or the finger, but which actually among anthropologists is by unanimous consent, the total height, taken as 1,000.

But the height can be known only very approximatively upon the skeleton; it varies according to the method of mounting and its state of preservation; only in the living subject can the height give a certain element of comparison. This gives a second reason for relying upon, and for perfecting specially the methods and measurements which concern the living.

But if it is only among the living that a sufficient number of subjects can be obtained to lead to a reliable conclusion, and if the certainty of this conclusion is increased with the numbers measured, medical men and anatomists, already occupied by their own avocations, cannot, without help, determine the different canons of humanity in the multiple conditions which we have named.

Anthropometry is then forced to address itself to all the world, and consequently to put itself within reach of all. It must adopt points of reference, simple, easy to be found without anatomical knowledge, and yet true and precise. A measurement well taken, though not exactly corresponding to that which is wanted, is in fact of more worth than an uncertain measurement with errors of 2 to 5 centimeters, as not unfrequently occurs. A measurement which gives variations of more than a centimeter in the hands of an operator of average intelligence ought certainly to be rejected. In anthropology ten good observations do not always counteract one bad one. The difference of one centimeter, which I am here supposing, in any measurement of moderate length, will often equal the maximum of the regular divergence between two different ages, sexes, or races. I have insisted upon this fact in my last memoir published in the "Revue d'Anthropologie" upon the "Mensuration

du tronc."* One or two examples will make my idea better understood.

The instructions of the Paris Society direct as the reference point for the inferior extremity of the thigh, the interarticular line which separates the external condyle of the femur from the upper surface of the tibia. The instructions of the Berlin Society prefer to this the external condyle of the femur. The English instructions, edited by Dr. Beddoe, indicate simply the articulation of the knee. The first point is anatomically perfect, but it is only accessible to a practised hand; the second wants precision, and moreover does not represent the actual extremity of the femur; the third is vague. On the other hand the anthropological statisticians of the American Civil War have taken the middle of the patella. To this it has been objected that it is not an anatomical point, and moreover that the patella is movable and changes its place with the contractions of the anterior muscles of the thigh. This is incontestable; but it is easily remedied. Place the subject upright, at ease, without giving him any special directions; wait kneeling before him; as soon as you see that the muscles are well relaxed, mark rapidly the centre of the patella with ink or coloured chalk. Nothing can be more simple.

It is true that the centre of the patella is slightly above the articulation. I have proved upon the dead subject that its lower border corresponds to the anterior border of the upper end of the tibia, but if it is considered of importance, it is easy to correct this difference.

Thus, on the one hand, the anatomical school, that which guides itself by the skeleton, possesses an excellent reference point, the interarticular line of the knee, but one which can only be determined by a professional man; on the other hand, the school which is engaged principally upon the living has a point quickly accessible to every one, but not very logical, since the patella is only a sesamoid bone, and scarcely a part of the skeleton proper. Of the two, I prefer, for the living subject, and in consideration of the difficulties of travellers, the centre of the patella, although I have up to the present time always taken the only exact articular line.

The separation of the arm from the forearm, so necessary for the important antibrachial index, is almost equally difficult to determine. A practised surgeon only can distinguish with the nail, the upper border of the head of the radius; the epicondyle gives considerable variations. On the contrary, the summit of

* "Etudes anthropometriques sur les Canons. 1re Le Tronc," par P. Topinard ("Revue d'Anthropologie," 1880, p. 593).

the olecranon,* and the middle articular fold in front are easy. But they are not logical, or rather they do not give the real length of the two bones wished for.

In anthropometry then there are two kinds of points of reference: the one rational, agreeing with the conformation of the skeleton, answering to the real length of the bones, but which only an anatomist, and in some cases only a skilful anatomist, can determine; the other sometimes quite different, corresponding rather to the external configuration, sacrificing the truth, but not conducing to notable errors in the hands of ordinary persons. When it is impossible to reconcile the two, I maintain without any hesitation that it is anatomical exactitude which ought to give way.

It happens, moreover, that even for the anatomist there is often no means of finding a point upon the living body, corresponding to a particular one on the skeleton. Thus the length of the femur cannot possibly be measured in the same way in the two cases. Neither the head of the bone nor the true upper border of the great trochanter, are accessible to measurement in the living. The anatomist is then forced to make a concession in this case. Why should he not make others when it is necessary?

Precision of the point of reference is the first condition of its value upon the living, and takes the lead of everything else; no one should deceive himself about this. Furthermore, the external proportions of the body clothed with its soft parts, muscles and tendons, deserve to be taken into consideration in anthropometry as much as the dry bones.

The rule of conduct in the choice of reference points upon the living, and consequently the corresponding measurements suitable to make known the dimensions in length and breadth of the body, may be thus summarised. Take the anatomy of the skeleton, the true length of the bones, for a guide as far as possible. Then choose among the points of reference proposed those which allow, by a system of conversion, the measurement adopted to be brought to that required. Thus some anatomists prescribe the upper border of the pubis (a point for many reasons inconvenient in practise) as the limit of the thigh; by adding 42 millimetres for average statures, that is to say, the distance in vertical projection from the pubis to the summit of the head of the femur, the anatomical length of the thigh is obtained. But as soon as it is proved that a reference point is dangerous, that it leads to mistakes, it must be given up, and we must

* When the forearm is flexed in placing the hand upon the abdomen between the umbilicus and the pubis, the summit of the olecranon comes to the level of the inferior extremity of the humerus.

begin once more to examine the external form. I cannot reach the head of the femur; the great trochanter and the pubis are bad; I try if the anterior superior iliac spine will suit travellers; I see objections to it; I seek elsewhere! Presently I shall show that there are still two ways of getting over the difficulty, and arriving at a satisfactory length of the thigh or of the lower limb.

There is one consideration which should be thought of in the choice of reference points; this is the objection the subject may make owing to modesty, fear, or sensibility; the perinæum for this reason alone ought to be rejected. It is useless to say that one cannot dream of using points subject to displacement, like the ends of the breasts. Nevertheless, we ought not absolutely to condemn purely cutaneous points; the articular folds in the extension of the limbs are very acceptable; the commissures also. I am not disinclined to think that the most elevated point of the skin, as apparent to the eye, at the level of the malar bones, ought to be accepted as the best "malar point" upon the living subject.

Upon the skeleton it is anatomical truth which is the criterion; upon the living it is the manner in which travellers can act in relation to the point proposed. The end to be obtained is uniformity of result in the hands of non-anatomical observers as well as anatomists. In order that a measurement should be good, it is necessary that, repeated ten times by the same operator, or by ten different operators, it gives practically the same figures. For the largest dimensions, the discrepancy permitted should not reach a centimeter; for the elements of the cephalic index, Broca admits one millimeter; for the elements of the nasal index of the living, I scarcely admit even so much.

The reference points being settled, the operator has to find them and mark them upon the skin, which is generally not done. How often have I seen in the old method the operator occupied with too many things, his hands encumbered, thinking that he has his finger upon the point, and taking in perfect confidence a measure different from that he intended, because the point has slipped and escaped him. A point of reference exact in one attitude is not so in another. When the arm is extended horizontally, the head of the humerus is carried inside of the glenoid cavity into the axilla, and the arm is shortened by 1 or 2 centimeters. The acromial point is thus made fallacious; it gives the length of the limb well when it falls vertically; it does not give it in the horizontal position. The Anthropometric Committee of the British Association ought strictly to forbid all measurements taken otherwise than in the

symmetrical attitude, standing in an easy posture, the arms falling, the legs together, the back and the head straight, looking forwards.

In all cases, extension and flexion change the relative position of the parts, and consequently of the points of reference. Every surgeon knows what errors occur in the measurement of the length of the lower limb, in cases of coxalgia, when the anterior and superior iliac spine is taken. I have made experiments on the dead body upon the articular line of the knee, it becomes displaced in relation to the skin as much as 2 centimeters.

The movements attending respiration are the greatest obstacle to measurement of the chest. Therefore, whatever be the point of reference accepted, care must be taken to place the thorax in a condition intermediate between elevation and depression of the sternum, the ribs and the clavicle—that is to say, intermediate between inspiration and expiration, making the subject count or speak, but in a quiet manner.

There are reference points which determine themselves; such is the seat, that is to say the natural base of the trunk in the living. It corresponds to the bi-ischiatic line of the skeleton. It is sufficient to make the subject sit upon the ground or upon a bench of which the height is taken. This is an excellent point of reference, which the most refractory natives immediately fall in with.

But up to the present time the supreme cause of error is in the apparatus used. I think that at last I have solved this problem.

Of the anthropometer which I use, constructed by Molteni, I have given a description and figure in the bulletins of the Society of Anthropology of Paris, 1880, p. 271, and General Pitt Rivers possesses one. It is of mathematical precision; an application of the process of the double square. A square slides in a graduated rule, kept vertical by a foot at its base, and which can be placed as desired, either before, behind, or on either side of the subject. It serves for all the vertical dimensions from 10 centimeters to 2 meters.*

I have experimented on all the other systems proposed. All, taking into consideration the generally defective manner in which they are practised, give gross errors which render the

* The method of projections for the vertical measurements and the process of the double square which results from it, is now accepted by all the world. It is that which the measurers of the Novara used, when they spoke of the plumb-line, it is that which the Americans have adopted at the very outset by the employment of the anthropometer of Bache. The instructions of the Society of Paris, of the British Association, of the Society of Berlin, are unanimous. The consequence is that the attitude of the body with the arms dropped by the side of the trunk cannot be questioned.

results illusory. I do not trust any of them. The most general fault results from the operator having too many things to superintend at the same time, and from the operation being too long. The subject becomes fatigued, rests upon one hip, lowers one arm more than the other, contracts a muscle, so that there is no unity in the general conditions.

The whole of the operations, as I practise them now, are divided into two periods, between which the subject as well as the operator can rest.

Thus: the subject presents himself; we begin by talking to him, and take some notes upon his hair, the colour of his skin, etc., to give him time to calm his emotion. Then he is undressed, and without any hurry, all the reference points are determined one by one, and marked with ink or a coloured chalk pencil upon the skin. This operation is certainly the most delicate. The subject is placed in the prescribed attitude, the arms by the side, etc. Certain of the points are determined with the fingers pressed deeply into the soft parts; others are obtained by practising alternate movements of extension and flexion; others, as the centre of the patella, are fixed by the sight alone, touching being expressly avoided.

When the point is once found, the fingers are gently taken away, the soft parts and the skin are allowed slowly to retake their place, the limb is put back into the prescribed attitude, and having been careful to make sure for the last time that the point has not escaped, the spot is marked. One is now quite easy. To do all this, a dexterity or *savoir faire* is needed, which can be acquired alone, but which ought to be taught. Therefore every one about to take measurements ought to have seen someone, already accustomed to do so, operate at least once. It is, however, quickly picked up.

The second period is short. The subject having retaken the prescribed attitude, the legs upright, the body straight, the arms close to the side, the head fixed, looking 25 paces forward, and preserving this time a perfect immobility, the anthropometer is placed upon the most convenient side, which may be changed if desired, and, commencing with the vertex, the point of the square is successively carried to each marked point on the body, and the numbers dictated. The subject has time neither to become fatigued, nor to modify sensibly his attitude.

With my portable anthropometer,* in consequence of its

* I have proposed to the Anthropological Institute a still more simple apparatus, and which can be made by the traveller wherever he is. This is a wooden board, about 10 centimeters wide, and 2 meters in height, fixed at its base into a block of wood, heavy, but of small width, so that it may be placed as required on either side or before or behind the subject. Upon this board, a graduated

construction in two principal pieces, there is an interruption between the measure above and those below one meter. But in a school or a recruiting office, the anthropometer not requiring to be portable, may be constructed in a single piece, and the operation will occupy not longer than a minute. With the old process, putting on all possible speed, the same operation requires a quarter of an hour.*

The division of the operations into two periods, the one during which the points of reference are determined and marked at leisure, the other during which the measures are read off, and finally the use of accurate instruments, this is the key of my system.

I should now enumerate the reference points, if not the best at least the most practical, the most easy for travellers who are not anatomists, to which I give the preference. But I must own that I am not definitively fixed upon some of these, and the researches which I have commenced upon this subject are not yet finished.

In a general way, I follow the instructions of the Anthropological Society of Paris. But I recognise that being taken from a purely anatomical point of view, they are not sufficiently at the command of the majority of travellers, and do not sufficiently take external morphology into account. The results of the long experience of artists are neglected in them. The height of the head and the number of times that it is contained in the total height, as well as the divisions of the head upon the median line seen from the front, into four parts, are not recommended in them. They do not insist upon the height of the trunk, which is the centre around which all the other proportions turn. They forget the relations so variable according to the ages, sexes, and races, which there are between the breadth of the shoulders and the breadth of the hips. The method which they indicate for taking the facial angle is out of date.

Of the following points, there is in my opinion no question whatever: Vertex, auditory opening, inferior border of the chin, notch of the sternum, inferior border of the acromion, styloid process of the radius, extremity of the middle finger, umbilicus, point of the external malleolus, base of sustentation in the sitting posture, or seat.

tape is fixed by two drawing pins and a square, of which the two branches meet at their flat sides, travels up and down. General Pitt Rivers possesses a small square of this kind.

* The best process up to the present time was by the double anthropometric board of Broca fixed to a wall, and along which a square slided. But the second square called an "indicator," which accompanied this, the difficulty of getting into a good light, and the fixity of the posterior plane, rendered its management sometimes inconvenient. Then it was necessary to have a truly vertical wall.

As regards the elbow, the knee, and the origin of the lower limb, I must use some reserve. Sappey and Quételet employed the middle of the articular fold, the "bleeding point" in the arm, and the fold of the groin in the thigh. It is very possible that they are right. The Americans have taken the centre of the patella, and they also may have found the truth.

As to the upper limit of the thigh, the great trochanter is certainly bad for vertical measurements, and the anterior and superior iliac spine is far from having the value that is imagined, in fat or even moderately stout subjects. There is a simple method of solving the difficulty, which does not appear to have been thought of; the seat being determined as I have shown in my last memoir published in the "Revue d'Anthropologie,"* all that is below will give the length of the lower limbs. I will explain myself.

By making the subject sit down on the ground upright, squarely, the legs parallel and extended, and taking the height to the vertex in this attitude, a measure is obtained which, subtracted from the total height, gives the length of the lower limbs; the same measure, diminished by the height of the head and of the neck, gives on the other hand the height of the trunk (seat to the sternal notch).

My anthropometer gives all the vertical measures, consequently those of the face also, but I think it preferable to take these with a special instrument that I call the cephalometric square, and which I have described in the bulletins of the Anthropological Society of Paris, at the place quoted above. The measurements to which I allude are those which are in vogue in the arts, and which are established by the following points: the insertion of the hair upon the forehead, the middle of the line of the eyebrows, the base of the nose, the interval of the upper and lower incisor teeth, and the point of the chin. They give those proportions of the head seen from the front which are most important for the distinction of races.

By the old methods, these measures or projections were taken by the aid of a square placed against a wall; but whatever one did, the head moved, and the measures were not comparable with one another. In my system the apparatus takes its bearing from the head itself; the operation scarcely lasts thirty seconds, and if the head changes its position a little there is no inconvenience from it; the apparatus follows its movements. The measures are read from above downwards. The only pre-

* "Etudes d'Anthropometrie. 1° Tronc," par P. Topinard ("Revue d'Anthropologie," 1880, p. 593).

caution to take consists in placing the head in such a position that the orbits face the horizon. Formerly, Broca and myself in my "Anthropology" recommended the head to be placed according to Camper's line. We have both given this up; this line raises the head too much. In taking these facial projections, as well as in taking the height, the occiput should not be made to rest, as is always done, against the posterior plane. This movement throws the head too much upwards in brachycephalic people. The head should in all these cases be kept straight, in its natural attitude, the eyes looking to the horizon.

I wish to insist strongly upon the measures of the fore part of the head of which I have just spoken being included in the English Instructions; they give the key to all the physiognomy, as the artists have well understood.

The transverse measurements of the trunk cannot be taken by my anthropometer, nor by my cephalometric square. I use for them a simple sliding compass of wood, upon the model of the *compas-glissière* of Broca, but 80 centimeters in length. These measurements can be reduced to the following:—1, the maximum transverse diameter of the shoulders, the branches of the compass resting upon the external face of the head of the humerus, which the deltoid muscle covers; 2, the maximum transverse diameter of the pelvis, or maximum bi-iliac diameter, embracing the two iliac crests; 3, the maximum transverse diameter of the hips, or bi-trochanteric diameter. The great trochanter, of which the upper limit is indefinite, and which ought to be rejected for vertical measurements, is on the contrary good here, where its external surface is in question.

Among the circumferences one only appears to me very useful, that of the chest, as directed in the English Instructions, and revised by General Pitt Rivers.

As to the facial angle, one process only gives it in a satisfactory manner, the median facial goniometer of Broca, one of the most ingenious instruments which has ever been devised. The most useful summit of this angle is that taken at the root of the median superior incisor teeth. If the traveller is disposed to take a second angle, the summit of this should be placed at the point of contact of the upper and lower incisors. *A propos* of the face, I recommend a measure very easy, and one of the most fertile in Anthropology, for the purpose of classifying races, and which deserves to rank even before the cephalic index. I mean the nasal index taken upon the living. Its elements, to be taken with the compass, are, the maximum width of the base of the nose, taking care not to depress the alæ, and the vertical height of the nose from its base to its root. The formula of the index is:—Breadth : Height : : X : 100.

I cannot leave this subject without speaking of an operation which I recommend to travellers, and which gives excellent results. The natives fall in with it with the greatest facility. It consists in drawing the outline of the hand and of the foot placed flat upon a sheet of paper, with an ordinary pencil, from which a half circumference has been cut away from its whole length. The flat side thus formed follows the contour, but care must be taken to hold the pencil quite perpendicular to the paper, and there are two precautions to be observed:—

1. The fore-arm should be placed so that its axis continues in a straight line with the axis of the hand placed flat. The leg should fall exactly perpendicular to the axis of the foot. 2. In beginning the operation upon the hand, the summits of the two styloid processes of the ulna and radius should be marked by a quick outward movement of the pencil. For the foot the pencil held quite straight should be made to slide from above downwards vertically along the tibia on the one hand, and the fibula on the other. When the tip of each malleolus is reached, the pencil goes beyond it and marks on the paper the place where it falls. The part situated behind the line which unites these two points, and which is perpendicular to the axis of the foot, represents the heel, the length of which in different races it is very important to know.

To sum up: the measurement of the human body with sufficient precision to lead to averages which may be depended upon is a very delicate operation. The differences which the proportions of the body present according to age, sex, races, and surrounding conditions depend upon the smallest quantities. To attain them, the causes of error must be reduced to a minimum. Among the causes some are inevitable; one cannot tell, for example, how much one depresses the skin; for the breadth of the wrist, this gives differences which reduced to proportions of the length of the hand, are rather large. By choosing simple reference points, very easy to be felt or seen, certain of these are diminished; by marking these points beforehand with the chalk, the chances of error are further lessened. Errors from defective instruments should not be allowed to occur.

The three fundamental principles are: determinating and marking the reference points slowly, taking the measurements quickly, and the possession of good instruments. The choice of the reference points is a fourth fundamental principle. In relying exclusively upon exact anatomy, anthropometry is only practicable to anatomists and medical men. But the knowledge of the types of proportions in all conditions of age, of surrounding circumstances, of race, etc., necessitates that the largest number of subjects possible should be made available. I do not

ask such numerous figures as those of the Americans in all cases, but of series of the same nature, at least a hundred individuals. For that it is necessary to appeal to every one, that is to say, to put anthropometry at the command of every intelligent person, it is necessary to simplify it, to ask only what is strictly necessary, and make sacrifices in favour of the most apparent points of reference.

I feel sure, knowing the essentially practical spirit of the English race, that the Anthropological Committee instituted by the British Association will take these principles as the basis of their operations.

MAY 25TH, 1880.

E. BURNETT TYLOR, Esq., F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and thanks were ordered to be returned to the respective donors :—

FOR THE LIBRARY.

From Professor AGASSIZ.—Bulletin of the Museum of Comparative Zoology at Harvard College, Cambridge, Mass., Vol. VI, Nos. 5–7.

From the SOCIETY.—Proceedings of the Royal Society, No. 203.

From the SOCIETY.—Journal of the Society of Arts, Nos. 1434, 1435.

From the SOCIETY.—Proceedings of the Royal Society of Tasmania, 1878.

From the SOCIETY.—Mittheilungen der Anthropologischen Gesellschaft in Wien, Band IX, Nr. 11–12.

From the SOCIETY OF ANTIQUARIES.—Archæologia. Vol. XLV, Part 2; Vol. XLVI, Part 1.

From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland, July, 1879.

From the EDITOR.—"Nature," Nos. 550, 551.

From the EDITOR.—Revue Scientifique, Nos. 46, 47.

From the EDITOR.—"Correspondenz-Blatt," May, 1880.

From the EDITOR.—Revue Internationale, No. 5.

The following paper was read—

The JAPANESE PEOPLE: *their* ORIGIN, *and the* RACE AS IT NOW EXISTS. By Mr. PFOUNDES, F.R. Geo. Soc., R. Colonial Inst., R.S. Lit., R. Asiatic Soc., R. Hist. Soc., Folk-lore Soc., Society of Arts, Hon. Sec. of the Nipon (Japan) Inst., etc.

THE origin of the Japanese has very frequently been the subject of discussion and of comment. I resided in Japan for over 13 years, during an eventful epoch of the national history. Having lived the native life amongst the people of all classes, speaking the colloquial fluently, and having dispensed with the aid of interpreters from an early period of my residence, I closely observed their customs and habit of life; and I hope I may be excused if I now essay to make my crude experiences of a very pleasant residence in a most interesting country and amongst a most kind and amiable people, of some utility to those who take interest in the peoples of the Far East.

It is first necessary to consider the geographical position of Japan. We see the Empire of Islands are situate in the North Pacific adjacent to the coast of Asia, in a strikingly similar manner to our own country and its relative position in the Atlantic on the western verge of Europe.

Connected with the Malay Archipelago by series of groups of islands; separated by a narrow strait, with islands in mid-channel from the peninsula of Corea; but a few days' passage from the centre of China, its northern islands touching the Amoor region; a chain of islands connecting with the peninsula of Kamschatka; and another chain running across the ocean to North America. Here we have at least six routes by which Japan has ever been easily accessible, with even the most primitive means of transport, and each from a very widely separated region. As a navigator and as a traveller, it is my firm conviction that in remote ages there was a considerable maritime intercourse in Eastern and other seas. Of this, but spare records have been permitted to come down to us, it is true; but we know that the three and three-quarter centuries that have elapsed, since Europeans first penetrated the long-sought-for and mysterious East, there has been but slight progress in the construction of native vessels. The same stereotyped forms still exist, and it may be reasonably supposed therefore they may have existed for tens of centuries before. The Japanese craft of to-day actually bear the form of the earliest attempts at navigation; these were mere bundles of a rush or flag (a large species of Eryanthus).

Waves of immigration; nomad tribes; defeated nations,

fleeing before a ruthless conqueror; and refugees; daring and adventurous spirits even in those early days no doubt existed, all of whom would seek new homes and fresh adventure. Having reached what would at first appear the extreme limit, they would fain settle down, their descendants later on, possibly, roving further, or cast away by wind and wave further and further away.

An enthusiast traced many very curious resemblances between the lost tribes and the Japanese people; but it would be strange indeed if some one had not traced these lost, yet often found, people to Japan.

It is only, therefore, in accordance with a common-sense view that we may presume the Japanese to be a mixed race; but they have not been a frequently conquered nation, though they have quarrelled amongst themselves throughout all time. Successive efforts of Chinese were ineffectual—the elements combined to protect the independence of Japan.

Within historic periods there has never been any important wave of immigration; castaways, refugees, and prisoners, there have been many of. On more than one occasion the aliens have been driven out or exterminated, and the most celebrated ancient diplomats were utterly opposed to foreign intruders.

Similarities, it may be expected, are to be traced throughout the region that Japan forms the centre of; the radius cannot be limited to the immediate vicinity, for we know Japanese vessels have drifted to the shores of California as well as to mid-Pacific and the southern China seas.

The Japanese were great travellers as well as daring marauders. They were the terror of the coast of China formerly. Even in the wars of the Indian Princes in the Malay peninsula they bore a very prominent part. They doubtless fell in with the Arabs (whom we know had even long before the sixth century of our era gained a firm footing in China), and with them voyaged to India and Africa.

The Fusan of Leyland and his predecessors is doubtless Japan: the eminent scholar, Robert K. Douglas, Esq., Professor of Chinese, King's College, is of my opinion in reference to the Chinese characters, thus confirming the early travels to and from Japan. Refugees from China reached Japan when the great wall was erected, writings destroyed, and scholars exterminated. Previous frequent messengers had been sent by the Chinese Emperors in search of the Elixir of Immortality and the Philosopher's Stone.

The native annals commence by claiming Divine origin and ancestry. The myths about pre-historic hero and heroine are of no value to this matter, although intensely interesting; but the

Japanese modestly moderate claim to antiquity, so unlike other Orientals, demand our respect Passing over the Cosmogony and fabulous period, we find the Japanese commence their era and history about the same time as that of Rome, B.C. 660; the first Emperor, Mikado, or Ruler, established himself, and something like systematic rule, in the vicinity of Kioto not very far from the present treaty ports Osaka—Hiogo. This Jinmu (Divine Warrior) may or may not be a mythical person; some Japanese of high intelligence and considerable culture and extensive information assure me that this family and its followers, ancestors of the present Imperial family, originally travelled to the southward and thence returned, conquered the wild tribes, and introduced civilisation.

For centuries history teems with accounts of efforts to civilise the people, subdue the wild and intractable aborigines, driving them step by step northward. In the second century of the Christian era they were driven beyond the vicinity of the present treaty port of Yokohama and subsequently to the North Island where they still exist and form the bulk of the by-no-means numerous inhabitants under the rule of officials and underlings sent from the centre of government.

The primitive state of nomadic fisher and hunter gradually merged into the more civilised tiller of the soil. The mainland from time to time was visited for the purpose of obtaining teachers of the arts, manufactures, skilled labour, and other civilising influences.

A voyager round the coast, or through the interior, to a lesser extent however, would meet with many local types, showing a strong contrast, and widely diverging types—red hair, very wavy and curly, dark brown and black hair; brown shades of eye and peculiarities of *physique* would be met with. The women of the east coast are notorious for the fairness of their complexion, those of the vicinity of Nagasaki for refinement of feature. The men of the far south are peculiar, and form both physically and mentally a strong contrast with those of the northern provinces.

How far localities that have been visited by foreigners, whether Chinese, Corean, Malayan or European, exhibit any traces of infusion of foreign blood, it must be left to exact and more scientific research to determine. Mrs. Matilda Chaplin Ayrton contributed a very able paper to the "Faculté de Medecine de Paris" recently, that is worthy of attention; exact measurements are given that will be of great value to students.

To judge from the people as they are, we must analyse the crude material, and divest it of its superabundant dross; I will therefore detail some peculiar customs and name some important points.

Marriage is not in reality confined to certain castes, families or tribes, nor is it a matter of mutual selection or individual choice. Frequently arranged when the principals are infants, often settled before either party has any knowledge of the other, it is usually a mutual family matter of convenience, expediency, or policy. Concubinage was permissible, especially where the lawful spouse proved barren, but to a limited extent.

The fiction was kept up that the handmaiden must be of gentle birth, but when a girl of humble origin attracted attention by her physical beauty or mental ability, there was no difficulty in finding some complaisant gentleman to father the girl, and give her a nominal title to gentle birth. In any case, once the mother of a child, she took up a well understood and defined position by no means undignified. Thus the arbitrary standard of female beauty must have become in time an important factor in moulding the somewhat homogeneous type of the ruling class and noble families, and we would seek in vain for the family peculiarities so strongly marked in many European families.

The head of the family having the right of selection, chose his heir; those who were not deemed fit to become the head of a family had little chance to gain a settled home.

Indiscriminate intercourse was only known to the men of the lowest type. Women of loose morals did not abound outside of the localities within which they were confined by a government that, finding that it could not obliterate the vicious side of nature, essayed to control it within limits, for the general weal.

The more heinous crimes are not unknown, it is true, but the Buddhist priesthood have been the great sinners, while certain youthful follies are happily almost unknown in Japan.

The absence of entire privacy in Japanese life, while it deadened the more refined feelings, yet had its compensating points. A Japanese gentleman had apartments separate from those of the women, and formerly much ceremony was observed in their intercourse. The manhood of the race is most marked; there is but little of what we know as mannishness. Homes are not broken up, lives irretrievably ruined, or families disgraced. The exuberance of animal spirits of the young men of Japan finds a safety valve, and vents itself in a direction less injurious to society.

It is true, however, that in Japan, as in other countries, youths often disappoint their early promise, after having reached a certain age. The selection resting entirely with the male, produces the results that might be expected. Large families are not common; it is true there are instances of women having a numerous progeny. I know of some who have borne from 9 to 12, and reared the majority.

The social relation of the sexes, the position of the wife, of parent and child, master and servant, each to some small degree affect the question as to the causes that have produced the existing race, and the very marked distinction between the class that has hitherto ruled, and the various local types of the common people.

There has been for ages a peculiar class or, I may say, caste (like the Cagots of Old France), excluded from residence or intermarriage with the people, and doomed to the vilest occupations. Whether these are the descendants of Corean prisoners or not, they are by no means an inferior people, mentally or physically, notwithstanding the enforced close inter-marriage and abject social position. That they are valiant they proved some years ago when called out to fight the rebels.

The food of a people for tens of generations may be worthy of consideration. Rice is not the universal staple, although the inhabitants of the great cities mainly depend upon it; there are many districts where it is almost unknown, and in the districts even where it is grown, it is a luxury—a dainty dish for festive occasions. Rice is to the Japanese tiller of the soil what the pig is to the Irishman: it pays the rent, and is equally respected.

Fish is plentifnl, yet the poorer classes have the most meagre portion, just as a relish (like the Irishman's "potato and point" of famine time); salted or dried, it finds its way to the towns and the interior. Vegetables, barley, wheat, buckwheat, yams, sweet potatoes and other esculents are the staple articles throughout the islands.

The wild boar, the ape, and a variety of game furnish food to the sparse inhabitants of the mountain districts. Salted vegetables, preparations of malt, curiously preserved fruits, &c., form innumerable relishes.

The clothing, giving but partial warmth and protection, and the habitations, should be mentioned. The posture indoors is more important, having a marked effect on the development of the figure, and the lower limbs, the ankle, instep, knee, &c.

Frequent hot bathing, scrubbing the body with bags of rice offal, and the callous portion with pumice stone, marriageable women blackening the teeth with a preparation mixed with a sulphuret and water that has decomposed in a pot containing iron nails, and many other habits, may be of interest, if they do not even materially bear upon the race and its present state.

Speaking from having experienced such a want, I would suggest that the various scientific bodies combine and issue a manual of inquiry, properly classified and systematized. Hundreds of intelligent persons would be induced to spend profitably time now wasted or misused, with a most valuable result to the cause of scientific research.

Discussion.

Mr. Holt asked what were the dragons' claws mentioned by the lecturer, and if they were kept in the shrines as sacred objects. He also inquired if the Japanese produced only grotesque pictures; all he had seen were more or less of that character. From their photographs the natives seemed rather a stolid race, but judging from their works of art they must be a nation of buffoons.

Mr. Pfoundes remarked that the grotesque and humorous sketches so commonly seen are not the only phase of Japanese caricature or of pictorial art. They are poetic and tragic as well; their art is reduced to a system that is very perfect in its classification, but it is in their loving picture of nature and its poetry that they excel; although their sketches of human nature are grotesque and often inartistic in detail they are true to the life.

"Demon's Claws"—Mr. Pfoundes produced a sketch, and at the request of Mons. Terrien de la Couperie endeavoured to explain the various readings of the Chinese characters. There is first the vulgar or colloquial rendering of the idea into the Japanese tongue; then there is the classical pronunciation of scholars, doctors, and classical poetical metre, and thirdly the pronunciation of the priests. The natives give various and conflicting statements as to the origin and growth of these readings, but they probably arise from the Chinese literature having been received from far distant parts of the Continent and at long intervals; being further modified by long ages, euphony, convenience, and the totally different natural mode of speech of the Japanese and Continental races.

ANTHROPOLOGICAL MISCELLANEA.

Anthropological Notes.

Necrology.

In addition to the great loss our science has sustained in the death of Dr. Paul Broca,* we have also to record the loss of another French worker who also laboured in our common field.

Dr. D. A. Godron, who died at Nancy on the 16th August last, though best known as a botanist, had also made some contributions to the science of Ethnology. From a "Liste des principaux ouvrages," published by Dr. Bonnet in "Le Naturaliste," we extract the following:—

"Étude ethnologique sur les origines des populations lorraines," 1862.

"Des origines ethnologiques des populations prussiennes," 1868.

"Mémoire sur des ossements humains trouvés dans une caverne des environs de Toul," 1864.

"L'âge de pierre en Lorraine," 1868.

Recent Literature.

"Catalogue of the Specimens Illustrating the Osteology and Dentition of Vertebrated Animals, recent and extinct, contained in the Museum of the Royal College of Surgeons of England." By W. H. Flower. Part I, Man: *Homo sapiens*, Linn. (1879).

It was in 1853 that the last "Catalogue of the Osteological Series" (comprising only the specimens of existing species) was published, and Anthropologists will rejoice that the vast cranial additions made to the Museum since that time, have not only now been catalogued up to the date of this publication, but that the work has had the more than efficient services of Prof. Flower. It is not, however, as a mere catalogue that this work will be consulted, for its introductory portion is a complete guide to all who would wish to begin the study of craniology and understand its method, whilst the tables at the end give the reliable material for which one so often searches in vain when desiring to study the cranial diversities and cerebral capacities of the different varieties of mankind.

As regards the method pursued in measuring these crania, we have

* We have the satisfaction of stating that Dr. Topinard succeeds Dr. Broca as Secretary-General of the Society of Anthropology at Paris. A memoir and portrait of Broca will appear in the next number of our Journal.

the author's own supplementary statement in "Nature" vol. xxi, p. 249. In taking the horizontal circumference the "Instructions Craniologiques" drawn up by Broca and published by the French Anthropological Society have been followed; whilst with regard to the important measurement of the antero-posterior diameter of the cranium, Prof. Flower decided to adopt the plan used by Rolleston in "British Barrows," by Barnard Davis in his "Thesaurus Craniorum," and by the majority of German Anthropologists.

Appended to the notice of each cranium is a record, where possible, of all the ascertainable facts in reference to the way in which it was acquired, and also remarks as to peculiarities of osteological structure. One remark is very pregnant. In reference to the skull of a Sheshaaht-Indian slave woman we read, "on account of her servile birth her head had not been distorted." This would surely discountenance the idea of the similarity of the remains of the peer and the peasant, at least among these people, and the Sheshaaht-Indian aristocracy must be a peculiarly favoured one.

The tables at the end of the work are most interesting and give what, to some, must be surprising results. The highest cerebral capacity (*Megacephalic*) are those of 17 *Dolichocephalic* Eskimo who average 1546 cub. centims, next to which come 24 *Mesaticephalic* English (mostly of lower classes) av. 1511 cub. centims. Amongst other notorious indigenous heroes whose skulls are contained in the museum are those of Jonathan Wilde, cap. 1425 cub. centims; and of Eugene Aram, cap. 1400 cub. centims; both of these coming just in the *Mesocephalic* range of capacities. The smallest (*Microcephalic*) cerebral capacities are 5 *Dolichocephalic* Veddahs who only average 1259 cub. centims and 6 *Brachycephalic* Andamanese who average 1266 cub. centims.

This catalogue will be frequently consulted by cranial statisticians and by all who are impelled to cranial research.

"Early Man in Britain and his place in the Tertiary Period." By W. Boyd Dawkins, M.A., F.R.S., F.G.S., F.S.A., London: Macmillan and Co., 1880.

The fourth edition of Lyell's "Antiquity of Man" bears date 1873; the fact that an interval of only seven years intervenes between that publication and the present work, which again is somewhat a sequel to the same author's "Cave-hunting" which appeared in 1874, seems proof positive that this side of Anthropology is neither neglected, forsaken, nor lacks its apostles. And whereas the increased number of prehistoric and archæological workers writing in different tongues and in more or less inaccessible publications to the ordinary reader, renders the study more diffuse, and the results less able to be assimilated by the non-specialist, a work like the above supplies a need and becomes a handbook to inquirers. It is doubtful whether Prof. Dawkins himself really appreciates all the responsibility of such a book, and perhaps it

is well if he does not. Anthropology is becoming rapidly more and more, as far as its principal achievements are concerned, a portion of our current ideas and an appreciated factor in our literature; and so judging from the past we may reasonably anticipate in the future that "leading articles" "polemical reviews" and "encyclopædic productions" will not fail to be based on material supplied by this storehouse of early facts and conclusions in a way and direction that would probably not altogether recommend themselves to the author.

Prof. Dawkins demonstrates that the Tertiary Period in Europe may be divided into six well defined stages as pointed out in his work on "Cave-hunting."

	Characteristics.
I. Eocene, or that in which the mammalia now on the earth were represented by allied forms belonging to existing orders and families.	*Living orders and families present.*
II. Meiocene, in which the alliance between living and fossil mammals is more close than before.	*Living genera.*
III. Pleiocene, in which living species of mammals appear.	*Living species.*
IV. Pleistocene, in which living species are more abundant than the extinct. Man appears.	*Living species abundant. Man appears.*
V. Prehistoric, in which domestic animals and cultivated fruits appear, and man has multiplied exceedingly on the earth.	*Man abundant. Domestic animals. Cultivated fruits.*
VI. Historic, in which the events are recorded in history.	*Historical record.*

Each of these periods is dealt with separately, the whole evidence for or against man's presence judicially investigated and sifted, the case summed up and a conclusion given.

Amongst the very many interesting speculations and conclusions in this work, one which is sure to draw attention is when the author in concluding his third chapter on the Meiocene Period decides that there is "no proof of man in Europe in the Meiocene age," and in discussing the opinion to the contrary put forth by Dr. Hamy, M. de Mortillet and others, founded in part on splinters of flint found in Mid-Meiocene strata at Thenay and on a notched fragment of a rib of an extinct kind of *Manatee* (*Halitherium*) found at Pouancé, remarks that if these be artificial, he would suggest "that they were made by one of the higher apes then living in France rather than by man."

"Fossil Men and their Modern Representatives." An attempt to illustrate the characters and condition of prehistoric men in Europe, by those of the American Races. By J. W. Dawson, LL.D., F.R.S., F.G.S., &c. London: Hodder and Stoughton, 1880.

This work is written in a different spirit and with different aims to Prof. Boyd Dawkins' great work on the same subject. Principal Dawson clearly states this on the penultimate page of his book: "My object, as stated in the first chapter of this work, has been to bring the testimony of facts relating to the existing or recently extinct tribes of America, to aid in correction and counteraction of the crude views prevalent among European archæologists as to the origin and antiquity of the prehistoric men of the caves, gravels and peats, of the Eastern Continent. The treatment of the subject has naturally been meagre and imperfect; but it will have served its purpose if it has been suggestive of lines of thought in harmony with higher views as to the origin and destinies of men than those which spring from monistic and materialistic hypotheses of the spontaneous evolution of consciousness, reason and morality from merely animal instincts." The book is full of most interesting illustrations, and written in a clear and pleasant manner, but whether it will carry convictions to those with whose views the author does not agree, is a question perhaps beyond our province to ask or answer.

"The Folk-lore, Manners, Customs, and Languages of the South Australian Aborigines, gathered from Inquiries made by Authority of the South Australian Government." Edited by the late Rev. G. Taplin, of Point Macleay. 1st Series. Adelaide, 1879.

In the year 1874 a circular and letter was received by Sir A. Musgrave, then Governor of South Australia, from Dr. Bleek, of Cape Town, proposing that, as inquiries had been made and interesting information elicited respecting the manners and customs—and especially folk-lore—of the aborigines of South Africa, similar inquiries should be instituted about the aborigines of South Australia. This suggestion was adopted, and on the

suggestion of Mr. Taplin a series of questions were prepared and distributed to all the keepers of aborigines' depôts throughout the colony, and to all persons who were known to be acquainted with the manners, customs, and languages of the aborigines. Twenty-four of the circulars of questions were filled up and replied to, and these form the material for the present volume, which we may hope is really, as the title states, only the "first series."

In discussing the origin of these people, Mr. Taplin well remarks that "autochthony remains a word only," and he inclines to the opinion that "the weight of evidence is in favour of their identity with the races inhabiting the continents and archipelagoes to the north and east, where we find the same system of kinship, the same customs, the same mental characteristics, and the same kinds of sorcery." It is not, however, for theories that this book will be valued and consulted, but rather for its mass of useful and in some cases most valuable information.

In discussing the fecundity of the Narrinyeri, fresh evidence is given for the denial of the exploded but lingering statement that if a woman has a half-caste child she never has another of her own race; and the results of the free use of tobacco by these women as stated at p. 47 is very curious, and will require corroboration before it can perhaps be made a "rule absolute"—"When a woman smokes a great deal during her pregnancy the child which she bears is always excessively fat. Such a child will resemble one of those little fat Chinese pigs, so abnormally fat will it be. Often a native woman is complimented on the plumpness of her baby when it arises solely from this cause. But to a person accustomed to see native children this fatness is known to be peculiar in its character. The child is round and bloated and unhealthy, although so fat; and in every instance such infants have died. I never knew one that survived the troubles of dentition and weaning."

Among the "Dieyerie" tribe cannibalistic practices of the most disgusting description are reported to take place as part of the funeral rites; the reason assigned being that "the nearest relatives may forget the departed and not be continually crying."

The following is the order in which they partake of their relatives:—

"The mother eats of her children.

"The children eat of their mother.

"Brothers-in-law and sisters-in-law eat of each other.

"Uncles, aunts, nephews, nieces, grandchildren, grandfathers, and grandmothers eat of each other.

"But the father does not eat of his offspring, or the offspring of his sire."

Other rites, which it would only be an insult to the rest of the animal world to call brutal, as they practise nothing of the kind, may be found fully described, such as the "ceremony of initiating the youths into manhood," p. 99; "circumcision," p. 79, etc.

Some interesting observations are made on the hair of these people. "They are a very hirsute race. Almost all have long

beards and moustaches, and the whole body of the men is covered with hair. Old men who have never worn clothes are especially hairy. The women, after they have left off child-bearing, generally have more or less whiskers. I have known women with whiskers of which many a man would be proud. They recognise this as a sign that they will not have any more children, and I think they are right."

The work is well illustrated; many excellent photographs of natives and their manufactures being given. It also abounds with philological notes, and contains a Grammar of the Narrinyeri Tribe of Aborigines. We heartily agree with and reiterate the last words of the editor's preface—"The writer commends the following pages to those who seek for truth respecting the human race, and who would gather up every contribution which may cast light upon the natural history of mankind."

"Die Ethnographisch-Anthropologische Abtheilung des Museum Godeffroy in Hamburg." Ein Beitrag zur Kunde der Südsee-Völker von J. D. E. Schmeltz und Dr. med. R. Krause, Hamburg. L. Friederischen and Co. 1881 (*sic*).

The publishers in their prospectus of this Catalogue state that the scientific matter comprised therein has exceeded even the expectations of the editors, and has now grown to such an extent and importance that they do not hesitate in rather calling the volume a "Handbook of Ethnography and Ethnology of the South-Sea Tribes."

"The catalogue is arranged in geographical order, beginning from Australia. Each part begins with a more or less detailed description of nearly all the islands of the Pacific Ocean, exhibiting them from the view of the geographer as well as that of the naturalist, and ends with a detailed description of the ethnographical objects of the museum, viz.—(*a*) objects of religious worship; (*b*) clothing and ornaments; (*c*) weapons and arms; (*d*) utensils, musical instruments, etc." To these are added bibliographical and sometimes critical notes.

The following may be taken as one example included in Sect. XIII, "Der Archipel Viti," "Clubs."

"2159 bis 65 aus dem Innern von Viti-Levu."

"*Wilkes, Vol. III., p.* 343 *und p.* 262 (*nach unten gerichtete Keule rechts*). *Christmann II., p.* 157, *Fig. b. Specht, Taf. VI., Fig.* 2 (*Nicht sehr gut!*) *Klemm., Fig.* 44. *Klemm., Kultrugesch Vol. IV., Taf. IV., oberste Figur. Curaçoa, oberste Fig. rechts auf Taf. bei, p.* 222. *Delessert, p.* 192, *Fig.* 52. *Williams, p.* 59, 2. *Reihe, mittlere Fig.*"

The work is illustrated with 46 plates, and furnished with an ethnological map divided into "Polynesian, Mikronesien and Molanesien," regions.

"WHO ARE THE SCOTCH?" By JAMES BONWICK, F.R.G.S. London: David Bogue, 1880.

This little work is written in a popular style, published at the small price of one shilling, and written with a distinct object—"to present in a condensed form an interesting ethnological question." It forms one of a series, "Our Nationalities," of which the first "Who are the Irish?" has already appeared.

When we reflect that the business of this Institute is to investigate, collect, and spread the truths of Anthropology, we cannot but rejoice to see that one of our members is taking such efficacious means to further the result.

"MANUEL DU VOYAGEUR." By D. KALTBRUNNER, Member of the Geographical Society of Geneva. Zurich: J. Wurster and Co., Publishers, 1879. Paris: C. Reinwald and Co.

"AIDE MÉMOIRE DU VOYAGEUR." Same Author and Publishers, 1881.

We have here two substantial volumes of about 800 and 500 pages, in which the author provides an elaborate and carefully-prepared manual for the use of scientific and other travellers into the still partly-unexplored regions of natural and social phenomena. The observant student receives full and systematic instruction in the collection of facts; and the directions given of how and what to observe, investigate, digest, and record, are such as travellers of ordinary intelligence and acquirements will be well able to act upon; excellent models for their guidance being liberally scattered through the work.

M. Kaltbrunner commences by describing the physical and mental requirements of the student of nature. He need not be an athlete, but should undergo some preparatory muscular training. He need not be a *savant* or a universal genius; but some time should be spent in general preparation and study in the particular branch of science the intending traveller has in view. He should also endeavour to acquire some facility in the use of such instruments as may be required.

The author's remarks on these preliminary preparations are judicious and minute. But, inasmuch as the manual is also intended for the use of amateur tourists, and other persons to whom a journey is but an accessory diversion from their ordinary avocations, the chapters devoted to this subject, which occupy nearly 130 of the opening pages, could not well have been curtailed without sacrificing some of their admirable completeness.

As an example of the author's method we give the following outline of some of the headings under which the various branches of scientific inquiry are arranged.

The traveller, once fairly started on the journey, is required to give the precise geographical position, limit, and extent of the country he is visiting; its topography, geology, &c. The mineral and agricultural resources are to be investigated. The nature of the climate, temperature, rainfall, and surface waters, together with the whole of the circumstances affecting the meteorological phenomena of the country.

After passing in review the details of the animal and vegetable kingdom generally, the question of the population is then reached. The inhabitants of the country are to be studied through statistics and any available source of information relating to their political, social, and domestic organisation; their language, literature, arts, and sciences.

At this stage the inquiries take a higher range, and become of special interest to the students of anthropology; for whether the inhabitants are regarded as individuals or as members of families they have to be considered in all that relates to them as human beings. Race, type, language, peculiarities of bodily form and constitution as variously developed under the different circumstance of climate, food, and clothing. Laws and customs, natural propensities and acquired habits, religious traditions, progress in arts and general civilisation, literature, poetry, and music. This is, as we have already stated, but a mere outline of some of the subjects on which the student is directed to collect facts.

In the "Aide Mémoire" for travellers, Anthropology occupies a prominent position. The traveller is furnished with a list of works to be consulted, and with hints for his guidance as to the line of demarcation between man and other animals, particularly the points in which he differs anatomically from the anthropoid apes; the antiquity of man, the points on which those who carry it back to the tertiary period rely as evidence; the variability of human types, and the light thrown upon that question by the constancy of the Egyptian type during the whole of the historical period. A brief summary is given of the controversies which have taken place upon the Neanderthal skull, the unity or plurality of human races, the origin of man, creation or transformism, and the centres of appearance and dispersion, whether one or many. The reader is also put in possession of materials for studying the question of migration, both before and after historical times, and of the extinction and disappearance of peoples, as proved by archæology and by tradition not less than by recent experience. These, and other useful collections of information on subjects of geography, geology and biology, are modestly entitled "general notions."

The manual affords facilities for the collection of valuable information upon scientific subjects. It is illustrated by about 300 beautifully-executed plates and drawings. The appendix contains some valuable tables and directions. The relative degrees of the meridians of Greenwich, Cadiz, Washington, Rome, and Pulkowa (Russia), with that of Paris are given. The barometrical tables and formulæ have been supplied by Professor Weilenmann, of Zurich. There is also a copious index.

In the "Aide Mémoire du Voyageur," M. Kaltbrunner has completed his work by furnishing a sort of portable encyclopædia of the information which will be useful to travellers, but which they would otherwise have to seek, perhaps vainly, in a number of special treatises. This volume, like the first, is liberally illustrated with coloured plates. Altogether the work cannot fail to be of great service to future students, travellers, and explorers.

At the risk of appearing too minute in our notice, we cannot avoid calling attention to an inaccuracy in the value of English money as set forth in Table VIII. of the Appendix. The practical standard of comparative value between English and French money is as follows, viz.: £1 sterling = 25, 00 francs; 1 florin = 2 shillings = 2, 50 francs; and 1 shilling = 1, 25 francs instead of 25, 22; 2, 32; and 1, 16, as stated in the table. The departure from the standard values is due to the course of exchange tempered by the money-changer's conscience. When the exchange at Paris is at 25 centimes in favour of England, a very common rate, the money-changer seldom allows more than 15 centimes. And in London the charge for changing French into English money is rarely less than 50 centimes for each £1; sometimes twice as much is charged.

AN ABSAROKA MYTH. By W. J. HOFFMAN, M.D.

A long time ago, before we had either guns or horses, and lived in a country where the snow never fell, there dwelt among us a beautiful maiden whom the sun saw and fell in love with. The maiden was the pride of the Absaroka, and every warrior tried to excel the others in making her presents of the finest robes. She was surrounded with every comfort, and lived in the best lodge in the village. The sun came here to visit her every night, and in time a child was born, which, as it grew older would amuse itself by sliding down the rays of sunlight that entered the lodge. After a while, *Fool Dog* also saw this woman and fell in love with her, but finding his love was not returned, he ravished her. The next time the sun visited her, she related all that had happened, whereupon the sun became very angry and threatened to destroy the Absaroka.

There came a great famine; the snow fell, and the buffalo did not return to the hunting grounds. The weather continued so cold during the following summer that the corn did not grow and the Absaroka were rapidly dying off from starvation and disease. Then the chief men met in council, where it was decided that it were better for them to seek a new home. It happened that while the Absaroka were moving, that *Fool Dog* was obliged to fall behind on the trail, as he was weak, sick, and starving; then *White Wolf*, the servant of the sun, appeared to him and said that the Absaroka might yet be saved if his directions were followed: *Fool Dog* must hasten on to overtake the party at their next camp, where an offering must be made to the sun; he must gather a large pile of dry wood and grass for kindling; also some corn and the fat of the buffalo, of which he must make ten balls, to be thrown upon the pile, when the fire would instantly appear.

When *White Wolf* had finished talking he disappeared, and *Fool Dog* started on the trail, though he had great difficulty in reaching the party who had already encamped at some distance for the night. He began to search in the various lodges for the corn and buffalo fat, but meeting only with disappointment, he strolled away from camp to meditate. Here he observed a solitary lodge, occupied by an old woman who, upon seeing the distress of *Fool Dog*, inquired the cause. *Fool Dog* told her of his meeting with *White*

Wolf, and the instructions he had received, but said he was unable to complete the offering to the sun, necessary for the preservation of the tribe. The old woman replied that she had a little corn left that had been laid by for planting in the country to which they were going, but was willing to part with some of it for the purpose required; also, that her son had a necklace to which was attached a small buckskin sack containing buffalo fat, which he always carried about with him as "medicine;" this, said the old woman, she would also give with the corn. The old woman then left, but soon returned again with the promised articles, of which *Fool Dog* at once made ten balls, and hastening back to camp, he threw them upon the pile of wood, which was immediately ignited.

Then *White Wolf* came again and told *Fool Dog* that he must take a "buffalo chip" (*bois de vache*), pulverise it and sprinkle it upon the snow, and that upon the following morning he would find ten buffalo there, of which the Absaroka must not permit any to escape. *Fool Dog* followed these instructions, and all the warriors who were strong enough turned out the next morning, surrounded the buffalo which they found, and killed them.

As there was scarcely enough meat to satisfy the starving people, they began to fear that they should yet perish, when *White Wolf* came a third time, and told *Fool Dog* that he must take another "buffalo chip," pulverise it, and sprinkle it upon the snow as he had done the other, when he would find one hundred buffalo at that place upon the following morning, but the Absaroka must be careful to kill every one, and not allow a single animal to escape. *Fool Dog* again did as he was told, and next morning the buffalo were found as promised, when the slaughter began. It happened that one young bull escaped, who immediately ran to the sun and complained. Then the sun cursed the buffalo, and told him he would no longer protect the herds. He next called *White Wolf* and cursed him, saying he was no longer a servant of the sun, but would be obliged to subsist upon such offal as the Absaroka chose to leave him. The sun no longer tried to destroy the Absaroka, but remained neutral, and since that time he has had no children with an Absaroka woman.

NOTE.—The Absaroka are generally, though erroneously, called the Crow Indians; the former is the tribal name and signifies "yellow-beak" or "yellow-beaked hawk."

Fool Dog was one of a band of that name who are considered sacred and devoted to death.

White Wolf is a mythical being. Frequently animals of abnormal form or colouration are looked upon with awe and superstition, and a mythical reason given for such peculiarities; as, for instance, the red shoulder of the red-winged blackbird (*Agelacus phoeniceus*, Linn.); the short tail of the hare, etc.

The fire to light the pile of wood, grass, etc., was supplied through some supernatural agency.

The term "medicine" is usually applied to anything partaking of the nature of a charm or fetish, and is prepared with attendant ceremonies by a "medicine chief" or shaman.

The above is a literal translation of the myth given in the Absaroka language by one of the chiefs who accompanied a delegation to Washington, D. C., in April, 1880.